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MACKENZIE VALLEY PIPELINE INQUIRY

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October 29, 1976

Mr. Ian G. Waddell,  
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Dear Mr. Waddell:

Attached is a document entitled "Commission Counsel  
Submissions" that I am submitting to the Inquiry  
for the final Argument.

Yours sincerely,

*Ian Scott per JB*

Ian G. Scott  
Commission Counsel

cc: All Participants

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## MACKENZIE VALLEY PIPELINE INQUIRY

### COMMISSION COUNSEL SUBMISSIONS

October 1976





## FOREWORD

The draft document attached consists of a number of separate presentations (each with a group of recommendations) on a variety of matters relating to the pipeline project, the local people and the environment. These separate presentations have not been fully integrated; some of them may overlap and some recommendations may not be entirely compatible.

This material is released to the Inquiry to assist in the forthcoming "Argument" and as a basis for discussion. It is not to be construed as a "finished" proposal or as being of more than temporary use in the Inquiry process. In particular, these recommendations should be viewed as preliminary in terms of the interrelationships among the Inquiry, the National Energy Board and the Federal and Territorial Governments.

Commission Counsel reserves the right to amend, withdraw or replace any part of this material.





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#### NOTE ON TERMINOLOGY

In these submissions, "the Company" refers to the pipeline company holding permits to build a gas pipeline in the Mackenzie Valley region. "The Agency" is used in the sense of an overall governmental pipeline regulatory agency, but if no such body were to exist, the term could be read to mean the governmental body or bodies with regulatory responsibility for the matter under discussion. The term "Authority" is used in the socio-economic submission for a monitoring and implementing arm of government providing a variety of functions relating to "extra-normal" social phenomena arising out of the pipeline and related projects.









CHAPTER 1

SOCIO-ECONOMIC ISSUES



## INTRODUCTION

The following material is divided into six sections which deal with some of the basic issues raised by the pipeline (viz. location, timing, the distribution of costs); the impact of the pipeline on northern native people; the question of whether the pipeline will prejudice native land claims; the impact on the major communities of the region; the effect on northern business; the employment of northern residents; and questions of economic stability and growth.

Originally, it was intended the submission should be a uniform, integrated piece of work in terms of format, the consistency of content, and the level of generalization at which discussion is conducted. Unfortunately time did not permit the development such a standardized approach. The arguments presented in each section must therefore be read as standing on their own, although some sections are obviously closely related to others.

Some of the sections deal with a particular topic; for example, "Draft Terms and Conditions for Employment and Training", and "Native Land Claims". Others cover a broad spectrum of subjects - eg. "Basic Issues", and "Regional Stability and Growth". The latter topic is something of a catch-all, containing material that goes beyond what the title would normally suggest.

The format that has been used in most sections attempts to separate analytical and descriptive material from actual recommendations. Success was not always achieved in this - recommendations will at times be found in the initial textual pages, and analysis has crept into the recommendations. This is not judged to be a serious problem.

Perhaps the major problem with the submission as a whole is that it may appear to come down on two (or more) sides of some important issues. Land claims is one such issue. The submission argues that native land claims may be prejudiced by the construction of a pipeline before land claims have been settled. However, having taken this view, much of the submission then proceeds to discuss a variety of topics on the basis that settlement does not occur. This represents not so much a confusion of thought, as the competing and alternative realities that are raised by the pipeline project itself.

There are serious and undeniable prejudices that would attend the granting of a right-of-way to build a pipeline before native land claims are settled. Nonetheless, the negotiating of such claims under the kinds of pressure that might exist if approval for the project became exclusively dependent upon the settling of native land claims could result in a situation not unlike that which evidence before the Inquiry associated with the colonial practice of treating with native groups and extinguishing aboriginal rights to clear the way for imminent settlement or development.





Furthermore, a settlement achieved under such circumstances would in all probability be final, and the corresponding necessity for the native population to protect their best interests far into the future would constitute a major impediment to their ability to achieve a flexible settlement and to take advantage of whatever changes may occur in the North and in their collective or individual perceptions of their best interests in the future. Therefore, a phased settlement which secures native interests against undue prejudice from a development such as the pipeline, compensates (insofar as this is possible) for rights alienated by development, and leaves open some areas for negotiation as the future becomes clearer, may be an alternative that should be considered. What must be continually kept in mind, just as it has been continually repeated before this Inquiry, is the importance of transferring effective control of their own future to the native people in a way that does not force them to make precipitate choices without knowledge of the consequences of these choices.

The possibility that neither a pipeline nor a land claims settlement will be undertaken at the present time is one that this Inquiry has not specifically considered. However, the recommendations which are addressed to the general issues of native and territorial self-determination, as well as to environmental protection and economic development (by expanded renewable resources harvesting for example), should nonetheless be seriously entertained by the federal government whatever the circumstances, for these recommendations are directed towards problems that would be exacerbated by, but would not exclusively originate in the pipeline project, and which would be alleviated but might not be entirely solved by a land claims settlement.

Finally, a matter of terminology requires clarification. The term "Authority" is used in this report to describe a monitoring and implementing arm of government that performs a variety of functions relating to "extra-normal" social phenomenon arising out of the pipeline and related projects. The term "Agency" was not used because it is being used in the environmental-technical submission to refer to surveillance machinery. There has not been time to consider whether the Authority and Agency should be a single organization or separate ones. There are merits to both possibilities, and the arguments will have to be examined at a later stage.



## BASIC ISSUES

### LOCATIONAL AND TIMING FACTORS

At both community hearings and in the form of overview evidence, this Inquiry heard many accounts of recent northern history. These suggested that dominance of native northern society by southern interests has constituted a pervasive and persistent problem, only marginally compensated for by the provision of a certain level of economic (as distinct from social) stability, and some well-intentioned but often ill-conceived humanitarian support schemes. In the past decade or so, since the establishment of much greater southern presence in the North, and in particular since the onset of major industrial activity, this southern intrusion has become particularly acute in many of the smaller communities. According to evidence heard by the Inquiry, it has also been associated with, if not always directly responsible for, individual and social disorders in the larger centres. Family breakdown, loss of local control, cultural weakness, and high levels of alcohol-related problems have increased sharply, and could continue to do so. The proposed Mackenzie Valley Pipeline and all its related developments could seriously aggravate these problems if wide ranging terms and conditions for controlling these projects are not established. Many of these terms and conditions would relate to the potential impact of the pipeline on all resident northerners, both native and white.

A basic view taken by the native northerners who gave evidence before the Inquiry was that land claims in both the Northwest Territories and the Yukon Territory should be settled before the construction of the proposed pipeline. Furthermore, this was the view presented to the Inquiry not only by the native organizations, but by representatives of development interests, and evidence of many other groups and individuals at the formal, community and southern hearings. In so far as these recommendations grow out of the evidence this Inquiry has heard, the necessity for settling outstanding claims must be given the highest priority.

The timing of pipeline development must also be given careful examination. Even the larger communities of the Pipeline Impact Region would experience serious social disorder if sufficient time were not taken for consultation, especially with groups that are vulnerable to sudden and large scale economic change. It will, in any case, take time and careful planning for some of the recommended terms and conditions to be put into effect - for example, those relating to education, wildlife management, and

*How much time before the adverse social  
consequences of no pipeline become evident  
and serious?*





How tolerable would be the effect on Coppermine and other communities if no development & present employment lost?

## Basic Issues

provisions for local business and employment. When considering the larger centres, it should be considered that, with the exception of Norman Wells, they all contain sizable native populations which are experiencing difficulty in adjusting to such change as has already occurred. Undue haste with respect to the pipeline would aggravate the predicament of these people. The impact of the pipeline on some of the smaller native communities might not be tolerable even if it were to be built fifty years from now. Indeed, it might never be tolerable. X

There are many important reasons for not rushing ahead with pipeline development, reasons that flow from a necessary regard for the rights, interests, and vulnerabilities of northerners and their communities, and that do not exclusively depend upon the legitimate agreement that land claims should be settled prior to any commitments to the pipeline to avoid unconscionable prejudice to the claim itself. However, it is nonetheless true that, if the evidence presented to the Inquiry is to be adopted, the outstanding reason for giving careful thought to the timing of the project would be to ensure that there was ample time to negotiate a land claims settlement that would be satisfactory to the native people of the Pipeline Impact Region, whether they live in a large "action" community or in one of the smaller villages.

However, it is possible that a settlement may not be achieved before a final decision is made that a pipeline should go ahead. If this were to happen, protection would have to be provided to certain extensive areas and land features that are of such great social significance that all possible measures would have to be taken to avoid having facilities such as pipelines and highways traverse them and broad rights of native self-determination which are an integral component of the premises upon which native claims would presumably be based would have to be firmly entrenched in the northern social, economic and political situation.

One of these areas of exceptional significance to the native community is the region through which Canadian Arctic Gas' proposed "interior route" would be built in the Northern Yukon. Of particular concern would be that part of the region that lies around Old Crow. The interior route would come within 7.5 miles of Old Crow and would cross the Old Crow River some 6 miles upstream of its confluence with the Porcupine. Thus, it would not only pose a threat to the settlement of Old Crow, it would also lie between that community and its traditional resource





harvesting area, Crow Flats. Some other route, lying well away from Old Crow and Crow Flats, would have to be found because of the very strong objection that residents of Old Crow voiced against the interior route at hearings held in that community. These people stated in unequivocal terms that having the pipeline come that close to their community and traditional resource harvesting grounds would be disastrous to them. If for environmental reasons, the coastal alternative of the Arctic Gas proposal was also unacceptable, then Arctic Gas would simply have to propose a route well south of the Porcupine Basin.

Another important geographic feature is the Great Bear River, which the people of Fort Franklin and Fort Norman refer to as the "highway of the people". Grave concern was expressed at both communities that this river might in some way be damaged or affected by the pipeline or a hydroelectric power project. The consequences of having the proposed pipeline cross the Great Bear River and the amelioration of impacts should be thoroughly investigated prior to final design.

In principle, the pipeline should give wide berth to all of the small Dene communities of the Mackenzie Valley. With the possible exception of the presence of a highway its potential for a destructive impact is only marginally less in the case of these communities than in the case of Old Crow. At the very least, the applicants should be required to demonstrate why they cannot locate the pipeline well away from native communities and lands, and features such as the Great Bear River, before it is finally agreed that the routes that have been proposed should be used.



## RESPONSIBILITIES AND COSTS

In considering the impacts of the proposed pipeline and related projects, it is assumed that the decision to build the pipeline constitutes the initial, critical step which would generate the series of projects and impacts with which the report is concerned. If there were no pipeline, then other events such as the development of Mackenzie Delta/Beaufort Sea gas reserves would have no basis for occurring. Accepting that the pipeline would precipitate all regional impacts would enable government to deal more easily with such complex and difficult questions as the equitable distribution of the cost burden arising out of those impacts. The problem is to find some way of determining what portion of such costs should be allocated to the initial source (that is the pipeline company), and what portion should be passed further along the causative chain.

*which is to say, the people at Canada.*

Put in its simplest terms, it is proposed that, beginning with the day that a Certificate of Convenience and Necessity is awarded, all the measurable extra-normal costs that occur in the Pipeline Impact Region should be borne by the Company. In communities lying outside of the primary Impact Region, the Company should also bear costs that can clearly be assigned to it. For example, it should pay the costs of housing for company and monitoring staff in communities such as Yellowknife.

In general, the Company would be expected to bear such costs as would arise out of impact information programs, monitoring, the employment of Northern residents on the pipeline and related projects, emergency accommodation necessitated because of these projects, special health and social service measures, etc. It would be expected to meet these costs whether they arose directly out of the pipeline, or whether they were more closely associated with some other source among the interrelated "package" of projects that comprise the greater pipeline project. Details on the various items that the Company's responsibilities would include would have to be included in final design review.

This method of handling measurable costs would place squarely on the Company the responsibility of determining what further distributions of costs should take place. The Company could undertake this role because it "sits in the middle" of the natural gas market; that is, it is the middleman between natural gas producers and consumers. Costs assigned to it initially could, within limits, be passed "backwards" to producers and "forward" to consumers via its tariffs. The limitation that would





\* Instead of charging these social costs directly against the pipeline, why not have the pipeline costs minimized so as to increase the economic rent captured by the public sector which would then be available to provide such social benefits?

## Basic Issues

apply to passing costs "back" to producers would be the minimum wellhead price that producers would require to cover all costs, including a normal profit. In the case of the consumers' market, the limit would be the price that distributing companies could afford to pay for natural gas, including production and transportation costs, and still remain in business.

Thorough study would have to be given to the question of whether such an assignment of costs by the Company might not press against or exceed these limits. However, preliminary studies on potential economic rents arising out of northern natural gas production suggest that substantial cost burdens could be borne by both gas producers and consumers before there was an exhaustion of the surpluses accruing to them under normal pricing arrangements in national and international natural gas markets. Moreover, the demand for natural gas in major markets like the United States appears to be relatively insensitive to price increases. Prices could likely rise significantly without a perceptible decrease in the volume of gas consumed.

While the Company should thus initially bear all assignable/measurable costs, it is proposed that the monitoring, planning and funding processes associated with such costs should be the responsibility of an "Authority" that the federal government should plan to establish to deal with the effects of the pipeline. This Authority should be created to cope with problems that lie beyond the normal capabilities of the various levels of government that are (or will be, following a land claims settlement) represented in the Greater Pipeline Impact Region. It should be pointed out that the Authority should not only be active with respect to the cost or negative side of pipeline development, it should also participate in positive programs which are described elsewhere in this report (e.g. see "Northern Business" and "Action Communities"). With respect to the present discussion, however its cost-related function would involve receiving impact funds from the Company, making decisions concerning the disposition of these funds, and carrying out the necessary remedial programs in co-operation with government. The Authority would thus be interposed between the Company and the federal, territorial and other fiscal processes of the greater Pipeline Impact Region.

\* There is the question of how the Authority would receive funds from the Company without being open to charges of conflict of interest. This would require careful study that should include the review of a number of possibilities, including a "right-of-

\* The obvious way is by capture of the economic rent, rather than by direct charge to the pipeline Company, often shown through normal income taxes & ROA payments.



If the pipeline results in social services, such as, <sup>but</sup> increased medical services, is this really a cost or a benefit?

## Basic Issues

way" tax or an appropriate surcharge on pipeline tariffs. Revenues of some such kind could be collected by the Federal Government and be specially earmarked for the impact funding purposes of the Authority.

Ensuring that the tax or surcharge (or whatever) was set at a sufficiently high level to cover impact costs would require an accurate forecast of what cost levels were likely to be encountered, a very difficult if not impossible task for an area such as the Greater Pipeline Impact Region at present. However, by the time final design was well underway, such forecasts should be possible within certain margins of error.\* Not only would they be useful in letting the Company know what costs it would have to meet, they could serve many other purposes. For example, the preparation of the forecasts could force government to confront squarely the whole question of the consequences of a project as large as the pipeline for a region as undeveloped as the Greater Pipeline Impact Region. As part of a regional planning process, the forecasts could lead to a clearer understanding of the regional capacity to absorb industrial development and, beyond this, to an establishment of the priorities that government should place on various alternative forms of development. <sup>Why should you get these priorities? Contradicts what native people ask for - more govt. paternalism.</sup>

The proposed Authority should not be viewed as being competitive with the territorial governments and whatever institutional arrangements were achieved under a land claims settlement. Government and the land claims entities would still conduct the bulk of the socio-economic programs of the Greater Pipeline Impact Region. Indeed, to carry out its own responsibilities, the Authority would probably make use of such programs. The division of labour between the Authority and regional governmental institutions could be as follows: the latter would concern themselves mainly with programs oriented toward the long term "normal" development of the pipeline region, given whatever definitions of development were applied. The Authority, on the other hand, would undertake programs directly concerned with modifying the "extra-normal" effects of the pipeline and related projects. Obviously, definitions of "normal" and "extra-normal" would have to be carefully worked out in both a native and non-native context.\* Also there would have to be a great deal of co-ordination between the Authority and the various regional government or quasi-government groups. The Authority would have a directorate and a number of committees to advise and perhaps direct it on various matters. Officials of the territorial governments and native organizations would presumably be active on these bodies.

\* The under-statement of the century!





\* So would the benefits?

## Basic Issues

The Authority, working with regional government groups, could cover a significant proportion of the socio-economic costs of the pipeline and related developments, particularly such costs as are measurable and assignable. But this would by no means represent all of the costs that this complex of projects would generate. Many costs would be unmeasurable, and compensatory processes would be difficult to apply to them. Others might be avoidable, the principal category here being those arising out of the further erosion of native culture. In a very real sense, such erosion could be considered a national cost. The loss of the alternative lifestyle that northern native people represent should be viewed as a potential loss to Canada. The avoidance of such a loss would depend, the native people say, on the degree to which the Dene, Inuit and Metis people of the Greater Pipeline Impact Region were able to achieve favourable and truly protective land claims settlements.

Throughout this report a great many tasks are assigned to the Authority as well as to ordinary government departments. The result is the frightening spectre of a massive increase of bureaucracy in a region that is already suffering the consequences of a serious bureaucratic overload. The future of the pipeline region could be that of massive government, represented by instruments such as the Authority, contending with massive corporate interests such as the pipeline company, with no real place in the schema for the people that live there. This would be a strange future, terrible to contemplate. It should therefore be understood that while this report proposes many ways of coping with the pipeline, it does not favour an extension of bureaucratic power beyond levels absolutely necessary to deal effectively with the project. It is strongly recommended that existing government machinery in the territories be carefully examined to determine how much of it is redundant in terms of present day needs. Redundant machinery could either be terminated or converted to some purpose useful to coping with the pipeline.

\* This conflicts with the earlier suggestion that govt should establish development priorities. Also ignores the reductions in bureaucracy that would result if northern residents were economically self-sufficient as a result of pipeline.

\* \* Ignores the evidence of the fact of the fact that the degree of municipalities, & others,





## SOCIAL MONITORING

Monitoring can be viewed as proceeding at several levels: most restrictively, it refers to the surveillance and correction of relatively small events. On the environmental side, an example of such an event might be the limited spillage of oil. On the socio-economic side, the counterpart of this might be limited damage to an individual trapline.

At a more general level, social monitoring would involve surveillance and the application of corrective action to broader events and processes that affect the well-being of an entire community or region. For example, it could entail keeping a record of alcohol related problems and taking remedial action if such problems rose above norms that a community found tolerable. Or, it might involve recording, by various indices, pressure on housing and undertaking programs to expand the housing stock.

At the broadest level, social monitoring could involve a sensitivity to general processes that affect the whole of a society. Individual indices that are typically used to measure social well-being do not readily pick up trends in such processes. For example, the consumer's price index or the National Income Accounts can say very little about changes in the quality of life in Canada over the past two decades even though it is well known that there have been important changes. Similarly, the North has recently seen a great increase in the sense of purpose and self-awareness of native people. There simply are no indices that would reveal what has occurred, and it would probably be futile to try to devise these. What has taken place can only be sensed through political institutions or special processes such as the present Inquiry.

Apart from concepts such as the Authority advanced in the previous section and "Impact Information Centers" dealt with later, this report makes few recommendations that relate specifically to monitoring. Yet, many of the proposals it makes have some bearing on the topic. If a special monitoring Authority is created, and many of the recommendations put forward in this report are followed, then it is probable that monitoring of the more specific kind would be undertaken quite adequately. Government would have to ensure that appropriate regional planning programs were formulated to utilize the information made available by means of such monitoring.

# what changes? Good? Bad? Indifferent?  
who says so?



It is especially important that the basis of monitoring should include the native view of problems and attendant remedial needs. Southern notions of social pathology may be at odds with native notions. In the case of the larger northern centres, sensitivity to each principal social or ethnic group must be maintained as fully as is possible. Indices of order and disorder should be local, and not derive from the imposition of untenable concepts on native groups and communities. *What does this mean?*

When it comes to monitoring of the broadest kind, the political and administrative institutions of the northern territories have not in the past been sufficiently sensitive to general shifts and trends.\* Change in the Greater Pipeline Impact region will likely be even more dramatic in future than it has been in the past. This would indicate a need for a continuation of a broad monitoring function of the kind that this Inquiry has initiated during the past two years. Machinery that could perform this function should be given consideration by government. This machinery could hold hearings in communities that perceive themselves to have problems, receive complaints from various individuals and associations, initiate research and, above all else, give all levels of government continuous "feed-back" on how people are being affected by change. In other words, what would seem needed in a region as divided and polarized as the Greater Pipeline Impact Region is some mechanism bearing certain characteristics associated with an ombusman.

*\* What evidence to support this?*



CONSULTATION WITH NATIVE PEOPLE *why only native people? Does this also include Metis?*

As a principle, the native people of the Greater Pipeline Impact Region should be consulted on all projects and programs that will have a significant effect on their lives. However, meaningful consultation can only take place when those who are being consulted have some real ability to make the views they express "stick". Otherwise, the government or private agency that is doing the consulting is under no real obligation to treat what they say as a serious matter, and consultation becomes an empty process.

Groups such as native people have virtually no means of "making things stick" at present. They do not have an effective power base from which to operate or bargain. Government retains ownership of the lands on which they live and hunt, and in many cases is the principal source of the cash resources, houses and other amenities and services that the people require in their daily lives. Moreover, government administration relating to native people has persistently been concentrated in notions and processes alien to these people and their communities.

Clearly, these are not the kinds of arrangements under which effective consultation can take place. They leave native people as supplicants rather than participants. Before consultation can really be meaningful, there must be a shift or devolution of power in favour of the native people; that is, the native people must have a more equal position from which to bargain and more control over consultation procedures.

Land, which perhaps surprisingly is rapidly becoming the real scarce resource of the North, must be involved in this devolution or transfer of power. It is argued that the best mechanism for ensuring that it is involved would be a comprehensive land claims settlement. On this ground too all possible steps should be taken to achieve such a settlement before further consultation on something as major as the proposed pipeline takes place. Such consultation will have to be a prominent aspect of final pipeline design.

However, if it is not possible to achieve a settlement, then some interim means of transferring land to native people should be used; for example, the "zones of influence" that have been suggested as an initial step toward land use planning and the recognition of the native community (in the absence of a land claims settlement) as legitimate (if nonspecific) landlords in







the north, and therefore interested parties in the regulating of right-of-way to the same extent as the federal and territorial governments. It is to be emphasized that such an interim step would itself take time; if consultation is to be made real, it cannot be hurried.



## NATIVE SOCIETY

1. Native society in the area where a pipeline would have a major and possibly drastic impact includes several kinds of communities. There are small bush camps usually occupied seasonally and scattered widely in the hinterlands of settlements and towns. There are the small settlements themselves where traditional life and culture are the majority's mode of life, and where non-natives are a small though powerful group. And there are larger places, towns like Inuvik or Hay River, where non-natives have dominance, both demographically and politically. The small settlements constitute the large majority of the communities in the project region, but native society, even as a minority sub-culture in largely non-native centres, must be recognized as an important part of native society as a whole. Some of the special needs of this latter group are discussed in the "Action Communities" section. In the following pages, it is the Native Society of the camp and small settlement with which we are especially, but not exclusively, concerned.

2. It should be made clear that this concern is based on the view which was powerfully and often poignantly repeated at the community hearings by native peoples of all ages and places, to the effect that they value their traditional life and acutely fear that their communities will become more like the larger centres. But this kind of fear extends also to native peoples who already are living in, or at the edge of, towns.

3. The concern here is with the native people of the communities that the Inquiry has visited as well as other communities that may be affected by the proposed pipeline and related projects. The communities are: Fort Smith, Fort Resolution, Hay River, Fort Rae, Kakisa Lake, and Yellowknife of the Great Slave Lake area; Fort Providence, Fort Simpson, Fort Liard, Nahanni Butte, Wrigley, Norman Wells, Fort Norman, Fort Franklin, Trout Lake, Colville Lake, and Fort Good Hope of the upper and middle Mackenzie area; Inuvik, Tuktoyaktuk, Fort McPherson, Arctic Red River, and Aklavik of the Mackenzie Delta; Old Crow in the northern Yukon; and Holman Island, Sachs Harbour and Paulatuk, which could be affected by developments in the Beaufort Sea. Some of the recommendations that apply to the people of these communities may also be relevant to communities which will be located far from the proposed pipeline and the hydrocarbon developments of the western Arctic, but which could contribute labour to these projects. Such communities include Coppermine, Cambridge Bay and small settlements located in the Keewatin and the Southern Yukon.



4. The native population of the Greater Pipeline Impact Region consists of the following components: There are approximately 7,500 treaty Indians, all of whom are located around Great Slave Lake, along the Mackenzie River system and in the Mackenzie Delta. There may be as many as 4,500 Metis, most of whom live around the Great Slave Lake area and in the Mackenzie Delta. There are some 3,500 Inuit, all of whom are located north of the Arctic Circle. The foregoing estimates do not include people living in communities which are some distance away from the prospective pipeline and hydrocarbon projects of the western Arctic; for example, Coppermine, the Keewatin, the southern Yukon. Altogether, the communities which would be affected by pipeline construction contain about 16,000 native people. This population significantly outnumbers the permanently resident white population, which may be estimated at approximately 10,000. These figures of course understate the extent to which in the smaller communities, i.e. in the majority of the communities of the pipeline impact region, native people greatly outnumber the non-native population.

5. Overview historical evidence presented to the Inquiry described how native people who originally lived in small, dispersed groups, were drawn into a trading and monetary economy, and came increasingly under the influence or even domination of non-natives. Although the historical accounts varied in their models for characterizing the nature of the early contact and change (cf: Brody and Hobart), they all tended to agree that, in the course of the more recent changes and transformations effected by southern administration and industrial activity, traditional culture, society, and economy have been disrupted and damaged. They also tended to agree that native peoples have, in the past twenty or thirty years, increasingly felt that an alien way of life has been and continues to be imposed upon them via economic ventures, seductive welfare or transfer payment systems, and an impaired educational system (vide: Hobart, Helm, Asch, Brody, and Usher). Yet the evidence also suggests, and the community hearings establish that native people sustain and hold fast to many values and activities they regard as traditional. However, the ability to live and work within these traditions, and to modify and evolve their basic principles, could be greatly diminished by the cumulative impact of the non-native world and its increasingly demanding and inflexible routines and prerogatives. It is in this context that the pipeline represents a threat to native society.





6. Native people are for the most part no longer nomadic, and live for much of each year in fixed communities which were not established with a primary concern for their proximity to harvestable land resources. They continue to use the land, in spite of many obstacles. If these become more serious, then the problems that the people experience in their settlements, including inter-generational tensions, break-downs in customary ways of looking after the old, erosion of self-confidence and cultural strength, and loss of educational and political autonomy, can only become more and more acute. Loss of language has become a symbol of many of these problems, and of the maintenance of traditional knowledge and outlooks in general. Because the control over key functions such as education, medicine, and welfare has been lifted from the native people and vested with large, impersonal government bureaucracies, the continuity and future of the traditional way of life is threatened. Many native peoples have expressed their apprehensions about the kind of future they feel a pipeline might bring to them, but their testimony also serves as a rejoinder to the fatalistic view - once widespread in southern Canada and among non-native northerners - that native culture and society is somehow doomed. Defence and maintenance of traditional values has been vigorous, and, despite so many difficulties, these values persist. It is necessary, then, to seek out ways in which native society can, in its own terms, achieve the self-determination it wishes.

7. The Community Hearings have indicated that the kinds of industrial processes that have already induced much change in the native communities have recently increased in their intensity. Much of this can be attributed to accelerated hydrocarbon exploration, though this is not the only source. Hydrocarbon exploration has imposed pressure on the already vulnerable native communities in two ways: directly, via interference with the resources on which the native people depend, and indirectly, via means such as inducing a substantial proportion of the population to take up industrial employment at a great distance from their homes.

8. Pressures arising out of direct interference with the resource base can most easily be understood by referring to land use and occupancy maps produced by COPE for the Mackenzie Delta, and to material on seismic exploration in the same region developed in map form by the Department of Indian and Northern Affairs. If exhibits #C-232A and #416 are viewed in relation to each other, it would seem that there has been considerable



conflict of land use between native people and the oil industry; so much so that there is at least a prima facie case that native use of the land has been inhibited.

9. A distinction can usefully be made between "actual" interference with native resources and "perceived" interference. Even if evidence has been insufficient to establish definitively whether, for example, seismic activities have seriously threatened the animal populations upon which native people depend, the fact that such harm is perceived to have occurred has been sufficient to produce widespread anxiety and altered attitudes towards the resource base in native communities. Disregard for this anxiety aggravates the native peoples' sense of being unable to control their own lives. In many areas what is perceived as a problem is a problem. It is worth recalling the view, expressed in Old Crow, that if the animals in the area were destroyed Old Crow would die. Such a perception of threat has, of itself, grave consequences.

10. Pressures that native people experience via direct means such as the employment of local labour can occur in the following ways: labour employed outside of the community is not available for such vital functions as hunting and fishing, care and maintenance of community property, performance of day to day community services, and participation in the social and cultural life of the community. All of these are important to the viability and continuity of a community.

11. In combination, these effects can have a strongly adverse impact on the continuity of native Society. This can perhaps be best understood through reference to the renewable resource base, and the relationship between the subsistence and a wage economies.

12. Aboriginal native society obviously had a direct dependence on the environment, and many resource harvesting activities can perhaps be said to have been determined by "laws of nature". But the tradition that developed in the fur-trade contact period involved a more complex man-land relationship. Economic life was seriously affected by prices paid for furs, the prices of goods which native people bought from traders upon whom they gradually came to depend, and by the quality of a technology that came from the South. Traditional life - or what native peoples now mean by that term - involved production for surplus and exchange, as well as for subsistence.





13. At present, native people are not as completely dependent on the land and its resources, as in traditional times. Yet many who testified before the Inquiry still spoke of the land as something vital to their cultural identity and economic welfare - as their "bank". Moreover, earnings from wage-labour are regarded as important because they facilitate harvesting of local renewable resources through purchase of essential hunting gear, which now typically includes items such as outboard motors and skidoos. Even in cases where the land is not used, it is valued because it is still there. Native people have a psychological and spiritual -- as well as an economic -- dependence on the land. Altogether, the dependence of northern native people on the land is so strong that further major disturbances to either the human or land components of the subsistence cycle could have serious, perhaps cumulative and irreversible, negative consequence for native society.

14. Native society will continue to change and adapt to new circumstances. A major characteristic of native society -- from technology to language -- is the degree to which it is highly adaptable. As an outstanding example of this adaptability, native people have learned to use the non-native economy to support their own bush economy and to make it more productive. Originally, they did so by trading furs for rifles and other useful goods. More recently, they have tapped the wage economy by trading their labour for the cash needed to buy ski-doo's, outboard motors, boats and canoes. They have also used it to derive cash to supplement the income-in-kind that they obtain from the land. In some areas, income-in-kind has become increasingly scarce as non-native activity has spread into the North, or as larger concentrations of native people have depleted the animal resources in the immediate neighbourhood of settlements.

15. The pipeline and related hydrocarbon development could, given the right conditions, provide the native people with a further opportunity to use wage employment to maintain and strengthen their own economy. Yet it will also represent a danger to the continuity of native society because its massive demands could drain labour from the home community and thereby reduce support for the traditional economy. There are also potentially negative consequences for the animals upon which the native people depend. The potential dangers of the situation suggest that native people should, as a group, make careful decisions about the extent to which they want to become involved with the pipeline and what impacts they would find acceptable.





16. Native people have for some time been entering wage employment as individuals, some seeking lifelong careers. This trend could continue and increase in importance during the next two decades as a sequence of large projects is undertaken in northern Canada. Neither government nor industry should discourage this; indeed the right of free contract of labour would suggest that there is nothing that they could do. Native organizations could perhaps attempt to persuade people not to commit themselves to non-native activities for life, but that would be a matter between the individual and these organizations. One thing that could be done to counter a deleterious rate of entry of native people into wage employment that is essentially migrant, or even emigrant, would be to ensure that these people had a greater range of economic opportunities within their own milieu.

17. Because some native people would choose to seek employment on the pipeline, either temporarily or permanently, it is probable that a "delivery system" would be established to help them to gain access to new kinds of jobs. The nature of such a system and how it might function is discussed under the heading "Employment of Northern Residents". It is equally important however, that avenues of return access to the native economy be kept open and strengthened for people who are temporarily employed in the wage economy or who think they are there permanently but choose not to remain.

18. The complete submersion of the traditional economy as a result of large scale industrial development would mean that avenues of return access would become closed-off. Once this occurred, they would be extremely hard to re-open. If renewable resource harvesting is nurtured and maintained alongside other economic developments, then native people would be able to choose between a greater variety of options. Indeed, such choices will be freely made only so long as investment and development of the non-renewable resource base is matched by parallel development and, if necessary, by outpost or camp programs, support services and facilities for hunters, etc. Failure to guarantee the traditional option would result in native people's being driven, against their declared preferences and aspirations, into migrant labour.

19. The long-term survival of native people as distinctive societies depends greatly on the range and strength of their cultural support systems. These will have to be especially vigorous in order to survive an event as large and potentially



traumatic as the proposed pipeline. Their nature and scope may depend on the conditions that native people are able to negotiate under a land claims settlement. However, it is felt to be in the scope of the Inquiry that recommendations on cultural support systems should be included here.

20. The first phase of large-scale development is probably the most disruptive, and therefore should not be allowed to commence until terms and conditions are properly met. This may require time. But if the protection of native society is not as secure as is possible, the consequences for Dene and Inuit could be severe. Analogue evidence given to the Inquiry referred to the acute demoralisation and social break-down that have occurred among indigenous groups, both in Canada and other parts of the world; and a connection has been made between rapid, large-scale economic "boom" and a set of individual as well as social pathologies. The risks to native society can be reduced by accepting that what the native people told the Inquiry is the truth of the matter: their way of life is deeply valued and should, under all circumstances, be allowed to grow and strengthen in the future. Finally, it is the Dene, Inuit and Metis who should decide what kinds of growth and strength they wish to have.

#### TRANSCRIPT REFERENCES

##### Alternate Development

COPE/ITC            Currie, Vol. 186  
                      Snowdon, Vol. 186

##### Historical Perspectives

NWT IB/MA           Fumoleau, Vol. 143  
  
Overview            Helm, Vol. 12  
                      Stager, Vol. 12

Substantial material in the community hearings

##### Consultation

COPE/ITC            Allison, Vols. 140, 141  
                      Beakhust, Vol. 199  
                      Cournoyer, Vols. 140, 141



Native Society

Noble, Vols. 140, 141  
Usher, Vols. 140, 141

MVPI            Elkin, Vol. 123  
                 Longlitz, Vols. 70, 71  
                 Yates, Vol. 123

NWT IB/MA       Bean, Vol. 144  
                 Richardson, McCullum, Vol. 147

Substantial material in community hearings..





SPECIFIC RECOMMENDATIONS AND COMMENTS

Land Use

The majority of the people of the Pipeline Impact Region are Native people, many of whom are still very strongly dependent on the land, economically, socially and culturally. Activities such as petroleum exploration and development, and pipeline construction represent a strong potential for conflicts with native land use. In the event of Pipeline development being agreed upon prior to the settlement of land claims, the interests of Native people would require special protection and the following are recommended at least as partial and interim measures:

1. The individual communities in the Pipeline Impact Region should have the most important role in any land use planning process that is established. They are sensitive to how the land can best serve their people and how the interests of community members can be protected. Therefore exclusive control of land use activities involving areas and/or resources upon which the community depends should be given to each community.
2. Each community should participate in the process of defining a zone around it which would include the land and resources necessary to support its economy and lifestyle. The zone would be of sufficient size to ensure a sufficient renewable resource harvest adequate to communities' defined needs, and adequate also to provide their renewable resource bases in perpetuity. Land should also be set aside for purposes of conservation. Such land selections could be established under section 19 of the Territorial Lands Act and would be an interim designation subject to conditions of a land claims settlement. Within the zone of influence the local people would be the primary authority; it is their interests that the zone of influence would be designed to protect. They would have priority in the use of surface resources -- such as granular materials, timber, fish, wildlife and water -- which fall within their zone and would be able to control access to the zone for purposes such as mineral exploration and tourism.



3. However, within the zone of influence a community would, in consultation with government, be required to give separate (but provisional) classification to lands which have a special or prior designation. This would include areas of (1) unique biological significance, (2) National parks, historic sites, (3) Commissioners Lands, (4) Areas of historical, cultural, social or religious interest. It is to be emphasized, once again, that these classifications would be interim by nature, and should not be regarded as anticipatory, therefore, of the terms and conditions of future land settlement negotiations.
4. Special sites such as wildlife refuges should be designated in a manner that would ensure that:
  - (a) a purpose of such areas would be to support the continuation of subsistence and other traditional activities provided that such a use did not imperil animal stocks.
  - (b) all renewable resources would be protected from the effects of development activities, increased access etc.
  - (c) Where, because of the danger of depleting certain species, no hunting can be tolerated, alternative arrangements would have to be made for local native people to obtain access to other areas having approximately the same resource characteristics and productivity. All bans on hunting by native people would have to be viewed as temporary - ie. until the danger to the depleted species had passed.

#### TRANSCRIPT REFERENCES

##### Land Use

Exhibits            416, 604, 657, C-22; C-232A

Substantial material in the community hearings

Territorial Lands Act, Section 19



Subsistence Cycle

Substantial material in the community hearings

See education recommendations; employment recommendations





## Renewable Resources

The subsistence cycle is still an important factor in the life of all of the native communities of the Pipeline Impact Region. Virtually every native person regards renewable resource harvesting in traditional lands as part of his heritage, identity and material wellbeing. It provides at the very least a fall-back resource, and, beyond the merely economic factor, is the basis of much self-respect. The number of persons with anything like a total dependence on renewable resources may have decreased, but hunting, trapping and fishing nevertheless continue to play a vital part in the region's dual economy. As the scale of non-native development grows, it will become even more important for native people to have use of the bush as an option that is always open to them. It is therefore recommended:

1. To protect actual subsistence resources each community should participate with government in the process of determining the lands that have maintained traditional economic activities. Each community should also indicate the ways in which their resource base can be protected against indirect effects of development in the region as a whole. Then each community should decide on how it will defend its base if it appears to be threatened by increased access. The community should have the options of limiting resource harvesting activities, limiting the growth of the community, etc.
2. The vulnerability stress level of the local subsistence cycles should be identified so that potential industrial impacts can be gauged against them, enabling effective counter measures to be taken before the local resource base is seriously damaged.
3. Resource harvesting activities can be compatible with partial participation in wage employment. A balance between the two kinds of activities is conditional on wage employment arrangements which are sensitive to the components of the subsistence cycle. Such arrangements could involve employment rotation schemes which would accommodate events like seasonal hunts, maintenance of trap-lines, whaling etc. Employers should be expected to consider having more than one person fill a particular job so that the necessary man hours could be supplied, but from more than one person. In this way



only a proportion of the prime 'resource harvesters' would be drawn out of the communities.

5. Since subsistence resources are an important part of the economic base of native communities, the skills and knowledge necessary to harvest and use them are critical. The education system must take this into consideration, and provide a curriculum that will enable native northerners to function in both a wage and subsistence economy. Acculturation and adjustment to the 'southern' education system must not be the exclusive focus of education for native people. The purpose of education within native society has traditionally been that of assisting the individual to find ways of serving his family, and to be a useful member of his community. Use of renewable resources as a means of cultural expression should be protected within the educational system. (For elaboration of this recommendation, see section on "Education".)



## Wildlife Management

The management of animal resources is of central importance to native society. Their dependence on renewable resources, as has repeatedly been said, bears on matters of great material and symbolic importance. The management of wildlife by outside agencies has thus constituted a serious and sometimes offensive intrusion into native life and custom. It is therefore of the utmost importance that game management arrangements be designed in such a way as to recognize the special rights, needs and expertise of native peoples in these matters.

Obviously it may happen that a species is threatened, and it must be agreed that protection of endangered wildlife is a matter for national as well as local concern. But this consideration has bearing on the extreme and special case, and requires that wildlife experts be consulted on a regular basis by game management groups.

To satisfy these two kinds of requirement, it is recommended that:

1. Native communities organize and maintain a wildlife management system. They should decide on licensing, quotas, seasons, and the hunting techniques that will be permitted.
2. Wildlife management programs established in the North must include regular monitoring of resources, and give attention to the condition of the local resource bases.
3. Native wildlife management organizations consult annually with an advisory council that comes from wildlife research agencies. The Federal and Territorial governments would thereby be able to maintain a dialogue with native wildlife managers, and southern scientific awareness of wildlife populations and habitats would be communicated to native peoples.
4. If constraints do have to be put on human activities, then these would be effected by the native wildlife managers, who would be encouraged to protect the interests of the subsistence and traditional resource users.





5. Sports hunting should be permitted in native lands only by agreement with the local wildlife management organizations, who would also have responsibility for the licensing and quota arrangements needed for such hunting.

TRANSCRIPT REFERENCES

COPE/ITC            Beakhust, Vol. 199

MVPI                Longlitz; Vols. 71, 72

Substantial material in the community hearings



## Education and Language

With pipeline construction and an increase in the non-Native population in the Pipeline Impact Region, an increased demand will exist for a standardized system and uniform curriculum in the schools regardless of location. Unless there are appropriate safeguards, all northern schooling may simply reflect the values and interests of white northerners. Studies of particular interest to Native people could be driven out of the curriculum; institutional arrangements that meet local cultural needs and conditions could be non-existent.

Education has to some extent taken over the socialization of the native peoples' children. Unless schooling takes careful account of native people's cultural and economic requirements, it becomes extremely disruptive. In particular, it tends to minimize the degree to which socialization of children can occur in the home. The arrangement of annual terms and holidays, classroom hours, curricula used, and language of instruction are all potential intrusions on local social, economic and cultural practices.

The language of the school room is an especially important matter. The pipeline and consequent increase of whites in the north could further endanger native languages, and so contribute to inter-generational difficulties and add to present threats to the future of native culture. As long as the native language remains the one in which the older generation thinks, by which it lives, and through which native cultures are perpetuated and developed, schooling must be arranged so that children can communicate with their parents in their own language.

Native educational needs do, however, include the possibility for acquiring knowledge, skills, and qualifications that will ensure they are able to deal with the larger society without the burden of chronic educational disadvantage. This means that native schools must try and satisfy two very different requirements. In order to do this it is recommended that:

1. Local education committees, composed of native people, prepare a school year, class-room hours, and other institutional arrangements they regard as compatible with local custom and need.



2. Non-native needs must be guaranteed, either by the establishment of a dual-school system, perhaps along the lines of parochial and secular schools that have long been a feature of Canadian educational practice, or by offering a curriculum choice in the middle and higher grades.
3. In any event, the role of the Territorial Department of Education should be that of consulting with, and otherwise assisting native education agencies. An interim take-over period should be worked out by the parties involved, and during this period the NWT would continue to provide the standard curriculum so that Native Students would not suffer a break in their education. Funds now spent by the Territorial Government on the education of native children should be turned over to the appropriate native education agencies. Funding of education should remain the responsibility of the Territorial government and formulas should be developed that ensure equality of funding for Native and non-Native students.
4. It is recommended that the Territorial Government retain responsibility for the education of those children whose parents wish for a non-native education. This is likely to occur in the settlements of Hay River, Fort Smith, Fort Simpson, Yellowknife, Pine Point, Norman Wells, and Inuvik.
5. It is recommended that, in order to promote a greater understanding of native culture in non-native schools, the NWT Department of Education make available funds and courses in 'native studies' for non-native students. This is to be done in consultation with the non-native community and the native education agencies. Every child should have the right to attend either native or non-native schools regardless of cultural background.
6. It is recommended that additional funds be made available by either the territorial or federal governments for the training of substantial numbers of native teachers, resource and information persons, and for the development of policy and curriculum for native schools.
7. It is recommended that a vocational training centre be established in Inuvik. School residential facilities currently not in use could be made available for the purpose.





8. It is recommended that the Federal Department of Manpower and the native organizations undertake to develop programs which would suit the retraining needs of the native people.
9. It is recommended that the federal and territorial governments recognize native language use as a priority. Legislation may be necessary to give meaning to such recognition. In any event, the native language should be the language of instruction in at least the first 3 grades in schools in communities where a native language is widely used by older persons.
10. All servicing of native curricular development should be scaled up. Funding should be provided to institutions that qualify native-speaking teachers, work on literature and text books in native languages, and, where necessary, develop orthographies for existing native languages. Production of native language radio and T.V. programs should be funded on grounds that these play a large and increasing part in general education. Also, funding should be provided for the purpose of building up, as fast as is possible, a body of literature that is local and to a substantial extent in native languages, while more general literature should be made available in the native languages.
11. It is recommended that in communities where native people regard their language as important, non-native children learn native languages, and that native children learn English as a second language.



13. It is recommended that native children have the opportunity to learn more than one native language. This would be of particular importance in communities such as Aklavik, where more than one native language is spoken.

#### TRANSCRIPT REFERENCES

CAGPL	Hobart, Vol. 113
Foothills	Jenson, Vols. 165, 166
COPE/ITC	Brody, Vol. 167 Button, Vol. 176 Robinson, Vol. 176
CYI	Cruikshank, Vol. 151 Sharpe, Vol. 153
NWT IB/MA	Gillie, Vol. 156 Kakfwi, Vol. 156 Richardson, Vol. 147 Yazzie, Vol. 156
MVPI	Krauss, Vol. 192 Ritter, Vol. 192



## Country Foods

Country foods are important to native society in a number of ways, of which the cultural or symbolic have already received at least passing mention. But their economic importance requires special attention here. Country foods represent a resource upon which Native people have long believed they could rely. If the availability of country food declines further or if land resources are disrupted due to development activities, then Native people will be forced into increased dependence on imported 'southern' substitutes. Chronic high costs, transportation problems and scarcities of certain commercial products could present serious problems, and add very considerably to the cost of living in native societies. It is therefore recommended that:

1. The domestic production of country food be recognized as a critical component of the native economy and society. The value of hunting and trapping as a way of life must be supported by legislative agencies. Programs which encourage and subsidize the production of country food within the territories should be extended. New programs should be developed as necessary to ensure this end.
2. The documentation and interpretation of the volume, disposition and use of country foods, as this has been undertaken by agencies such as GNWT, must be recognized as being quantitatively inaccurate, and significantly misrepresentative of the real state of subsistence resource use. Local government must immediately reassess its documentation procedures and initiate a new approach towards:
  - a) Collecting data on domestic harvest (Fur Export Tax Returns, General Hunting Licence Returns, and the Traders Fur Record Books are not sufficient).
  - b) Recognizing the many uses of the domestic harvesting of species. Proper evaluation of country produce cannot ignore this.





- c) Establishing a system which is designed to measure actual quantity and value of food production for the region. Statements of value should include use of substitution costs.

TRANSCRIPT REFERENCES

CAGPL	Hobart, Vols. 113, 158
COPE/ITC	Brody, Vol. 166 Usher, Vols. 166, 167
NWT IB/MA	Asch, Vols. 148, 160 Greenland, Vol. 147 Nahanni, Vols. 147, 148 Richardson, Vol. 147 Rushforth, Vol. 148 Snowshoe, Vol. 147

Substantial material in the community hearings



## Energy Supply to Native Communities

One way in which the pipeline could be a direct benefit to the native communities is by means of reductions to the energy costs of these communities. The evidence indicates that in almost all native communities, the supply of energy for both heating and electrical generation can be subject to disruptions in availability and is very expensive compared to typical energy costs in southern communities. To provide some compensation for the disruption caused by the pipeline, native communities in the area should all benefit from the pipeline to at least the extent that the supply of energy would be assured and be available at a cost no higher than for southern communities.

The best method of achieving these objectives is not necessarily by making gas available to communities. In fact, it is probable that with the exception of a few communities immediately along side, it is unlikely that gas piped laterally from the main pipeline would be an economic energy alternative when all costs are taken into account. In order to ensure equity and fairness, it is considered that a royalty or tax should be levied on the applicant, a fund should be established under the auspices of the Authority proposed earlier in this submission to assist the native communities in the best form or mix of energy sources and to subsidize these to a cost level no higher than in southern communities. (See discussion in the section on "Action" Communities.)

1. It is recommended that a program to provide each native community with an assured supply of energy at southern equivalent costs be set up as ancillary to the construction and operation of a through gas pipeline:
2. It is recommended that this program be funded from a royalty or tax levied on the applicant and administered by the Authority.
3. It is recommended that as a first step, the Authority be charged in conjunction with the communities for establishing "best" source(s) of energy (gas, existing fuels or others) for both heating and electrical generation, and ensuring that every community is provided with those forms of energy which are agreed upon.



4. It is recommended that the Authority be charged with determining the cost differential between the agreed upon "best" source(s) and southern community energy costs, establishing a rate of tax or royalty on the applicant equal to this difference and using it to subsidize energy costs in native communities so that they will, at their highest, be equal with those in the south.

TRANSCRIPT REFERENCES

CAGPL	Carter, Vols. C-5, C-30
Foothills	Burrell, Vols. 165, 166, C-21, C-70
	Ellwood, Vols. C-25, C-68
	Hushion, Vol. C-5
	Mirosh, Vols. C-30, C-33





## Legal Systems and Institutions

Many tensions and much alienation result from the imposition of a southern-based system of justice on northern native people, who are of a different culture and tradition. Many laws, based on alien historical necessities, are incomprehensible to them, and are not internalized. As a result, legal sanctions imposed by the present system carry little stigma and appear to have little coercive or rehabilitative effect. Pipeline dislocations may intensify such problems.

In many jurisdictions, native people may legally administer their own courts. The Law Reform Commission of Canada is currently studying the concept of diversion of criminal cases from the regular courts in favour of non-adversary handling of disputes. Such a concept seems suited to the pattern of decision making in native society, as this Inquiry has come to know it through the community hearings. It is possible, should the native people deem it desirable, for this initiative to develop into the codification of native customary law, and hence into the establishment of something in the nature of native tribunals.

1. It is recommended that government fund appropriate native organizations or agencies to study and codify traditional law, and that courts of "customary law" be established in the North. These might be administered by Dene and Inuit associations, along the lines of similar jurisdictions elsewhere, e.g. the Navaho legal system.
2. It is recommended that paralegal training centres be provided in each northern region, as in Frobisher Bay, to employ and train Dene and Inuit paraprofessional staff, and to provide paralegal services to native offenders.
3. It is recommended that police in native communities should be responsible to some municipal authority, such as a Native Police Commission, to be established by regional band, community councils, or native associations.



## Traffic to Communities

Access to native communities must not be disrupted even though the pipeline developer may invest heavily in infrastructure improvement and expansion. The task of ensuring normal community access is difficult considering that the volume of pipeline related traffic would overshadow community resupply and passenger traffic. Uninterrupted delivery of either commodities or passenger service to community residents is critical to the operation of the community: The community is likely to be far more sensitive to any delays resulting from congestion within the transportation system on which it depends than is the pipeline. The following is therefore recommended:

1. Community related needs must have priority over pipeline related traffic moving through jointly used community infrastructure.
2. Under the general administration of the proposed Authority, a local committee should be established for every community where facilities are jointly used. The committee should consist of community residents, a representative of the pipeline Company and a representative of the territorial government. Whenever pipeline related use of facilities conflicts with community needs, the committee could impose limits on pipeline utilization of facilities which would ensure that community needs were served before those of the pipeline.
3. Transient pipeline workers moving through community transport facilities must be kept isolated from the community.



TRANSCRIPT REFERENCES

Private        B. Allan, Vol. C-36  
Private        C. Abel, Vol. C-16  
Private        P. Blake, Vol. C-16  
Private        Robertson, Vol. C-39

See transcript references in regards to barging, transport and local business





## Access to Communities

If it is decided that a pipeline will be built, even the smallest communities could be faced with at least a short-term flood of outsiders - from government officials to pipeline workers to transients and drifters. At the community hearings, however, native people stated very clearly that many outsiders would not be welcome. It is not easy to see ways in which entry to these communities could be restricted without thereby establishing controls that might be profoundly inconsistent with long term objectives. The alternative is to control the non-native presence, and it is therefore recommended that:

1. Development sites be in the nature of bunk-house or camp operations, where workers live and work. Employees would not normally be allowed outside the camp and work boundaries of the construction and right-of-way areas. Failure to comply with this should bring termination of employment.
2. In so far as rights-of-way between sites are necessitated by the nature of the work in hand, these should be negotiated -- with regard both to routing and means of travel - with Dene or Inuit communities through or over whose lands such routes would have to pass.
3. Non-native administration should, unless the native peoples request otherwise, be situated either at the larger centres of the region (e.g. Inuvik or Yellowknife), or at the construction sites. In general, the non-native bureaucratic presence, even in the Action Communities, should be kept to a minimum.

## TRANSCRIPT REFERENCES

CAGPL	Trusty, Hobart, Vol. 162, 163 Carter, Vol. C-35
Foothills	Ellwood, Burrell, Jenson, Vol. 165, 166 Littledale, Vol. C-35
CYI	Sprecker, Vol. 53 Sharpe, Vol. 153
Berger	Vol. C-35



## NATIVE LAND CLAIMS

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### INTRODUCTION

The common position of the Native People of the Northwest Territory and Northern Yukon is that before any Mackenzie Valley pipeline is approved their land claims must be settled. This is a position which has not only been urged on you by the Native organizations at the formal hearings but is a position that has been taken by the Native People at every community hearing. It is also a position which many white people at the community hearings have supported. Foothills Pipelines, through its President, Mr. Blair, has stated that they think the land claims should be settled first and that their proposal allows the necessary time to permit this. Arctic Gas, through their President, Vern Horte, while accepting the importance of settling the land claims and while hoping that it will be settled prior to construction, has stated that they think the land claims is a separate issue from the pipeline and they would be prepared, if the Government approved the project, to start construction prior to settlement.

The basic position of the Native People is that the commencement of construction of the pipeline and the energy corridor in the Mackenzie Valley and Northern Yukon will prejudice indelibly the negotiation process and the objectives of their land claim settlement. You have stated in your Preliminary Rulings I: that it was open to the Native People to argue that you should recommend as a term and condition that no right-of-way be granted until the land claims have been settled, even though that was a term and condition addressed to the Government of Canada rather than the companies seeking the right-of-way. You also stated in



your Preliminary Rulings II: that the Native organizations should in due course indicate the nature and extent of their land claims for the purpose of delineating the nature of the prejudice, if any, which would be incurred should the pipeline construction precede settlement of the land claims and the measures which could be taken, if any, to avoid that prejudice.

In these submissions we will be identifying:

1. the nature and extent of the land claim settlement which the Native People are seeking;
2. the nature of the prejudice and the implications of constructing the pipeline prior to settlement of Native land claims;
3. the measures which can be taken, if any, to ameliorate or avoid the prejudice of prior construction, particularly measures which can be formulated as terms and conditions of this Inquiry;
4. the implications of concurrent negotiation and settlement of the land claims with construction of the pipeline.

#### 1. THE NATURE AND EXTENT OF THE NATIVE LAND CLAIMS

Clearly, to understand the relationship between the proposed pipeline and the Native land claims and the extent to which construction of the one will undermine the settlement of the other, we must clearly understand what is involved in the land claims. As we have come to understand it, the land claims, while having land at its centre, encompasses much more than an agreement about land - much more than a real estate transaction. As we understand the evidence, what the Native People are asserting is a fundamental claim to self-determination, the right to control their own political, cultural, economic destiny within Canadian confederation, to ensure their survival as a distinct people within Canada. As such the claims, while rooted in the concept of aboriginal rights, go beyond the simple right to use and occupy traditional territories conferred by aboriginal rights under Canadian law. As Professor Falk indicated, the claim to self-determination to preserve their culture and way of life is supported by international law, particularly The International Covenant on Civil and Political Rights and The International Covenant on Economic, Social and Cultural Rights, covenants





which, while not ratified by Canada, are nevertheless part of international customary law. Negotiation of land claims of the Native People is no more, no less than the negotiation of a social contract between the Native People of the North and Canada for their full participation in confederation. As Professor Russell pointed out it involves the extension to the indigenous people of the spirit and substance of the social contract of 1867 made between two other founding parties of Canadian nationhood.

What are the basic terms of this social contract the Native People seek? The first term is recognition of their collective right to their traditional homeland. The Dene claim, through aboriginal title, ownership to 450,000 square miles within the Northwest Territories. They argue that Treaties 8 and 11, which in specific terms, sought to extinguish the aboriginal rights of the Dene in the Northwest Territories do not in fact do so because the understanding of the Dene at the time of the Treaties was that they were entering into treaties of peace and recognition of their rights to the land, not extinguishment of those rights. They have initiated proceedings in the courts seeking the registration of a caveat on the basis of their unextinguished aboriginal title. This action is presently before the Supreme Court of Canada. You have heard in the community hearings from people who were present at the time of the signing of the Treaties and they have told you how they understood these events. In particular they have told you that they were promised that their rights to hunt, fish and trap would never be interfered with and that to them was an affirmation not extinguishment of their collective rights to their land. Father Fumoleau in his presentation of the history of Treaties 8 and 11 has supported through documentation the Dene oral history and understanding of the Treaties.

Evidence has also been given both in the formal and community hearings by the Dene of their Land Use Study, a study designed to show their traditional use and occupancy of their land. Maps produced through this study describe traplines, travel routes, hunting and fishing and trapping camps, both permanent and temporary, and the animals, birds and fish to be found in a particular area. The study which was designed as part of the land claims research is not meant to describe definitively present use but rather the use made in the collective experience of those participating in the study. In the community hearings, however, evidence has been given as to present land use and critical areas for subsistence activities have been identified. For example in Arctic Red River, Travailant Lake was so



identified as was the Old Crow Flats for the community of Old Crow. Evidence has also been given at the formal hearings by Professor Rushforth as to recent land use and subsistence activities of the people of Fort Franklin on Great Bear Lake. Professor Rushforth on the basis of his study, which involved interviews with almost every household in Fort Franklin, stated that the Fort Franklin people still use all of their traditional territory although the utilization patterns have changed due to the establishment of a permanent settlement at Fort Franklin dating from the early 1950's. Professor Rushforth further documented the vital importance of the land to the people in providing a highly significant part of their food sources and, while he quantified that importance in dollar terms, he indicated that such a measurement could not adequately reflect the real value of country food to Native People, a point further made by Dr. Usher.

Many people in the community hearings talked of the importance to them of their land as the source of their food, their livelihood, and of their special relationship, a spiritual relationship, to the land. This was perhaps best expressed by Jim Pierrot of Fort Good Hope when he stated quite simply that "The land, it is like my blood." This special relationship in which people see the land as their mother and their father and as the centre of their being is something of which we as white people from the South seem to have little understanding.

The Dene in their land claims, insofar as they have been articulated to the Inquiry, would seek to formalize their rights of ownership to their traditional territories. In the past, land claims settlements as exemplified by the Robinson Treaties, the Prairie Treaties and Treaties 8 and 11, have had as their basis the extinguishment of aboriginal title and the establishment of a much more limited reserve land base, on the assumption that the Native People would abandon their nomadic ways and adopt the sedentary lifestyle associated with agriculture and industrialization. Even though the more recent land claims settlements such as the James Bay Agreement, with which we will be dealing later, do not have to the same extent this expectation of abandonment of traditional lifestyle, they do reflect the traditional pattern in their extinguishment of aboriginal title.

The Dene, in seeking recognition rather than extinguishment of their land rights, are therefore seeking a break with the tradition of the Treaties. They have, through the evidence of Douglas Sanders, pointed to other jurisdictions where aboriginal





title has been recognized, not extinguished, and then converted into a land tenure form to ensure its compatibility with the prevailing legal system to permit transactions to take place and to be recorded. Mr. Sanders in giving evidence of these systems, of which the Maori System of New Zealand is one example, was of the view that recognition and conversion of Dene use and occupancy was entirely possible notwithstanding that their land use pattern was based upon hunting and gathering as opposed to the agricultural patterns of land use of most of the jurisdictions where such recognition and conversion has taken place.

The Inuit have also laid claim, by right of aboriginal title, to large areas of land and water in the Western Arctic above the tree line, a claim which has been formalized in a proposal to the Federal Government which covers not only the Inuit of the Western Arctic but all Inuit in the Northwest Territories. They too have completed a Land Use and Occupancy Study documenting their use and occupancy which has been presented to the Inquiry at the hearings held in the communities in the Mackenzie Delta and Beaufort Sea area. This land use study has, unlike the study of the Dene, differentiated land use over time so that the study does provide evidence of the areas which have been used in the more recent past for subsistence and other traditional land based activities. As with the Dene, the Inuit in their community hearings have explained the central importance in their lives of the land and the ocean and its resources. Old people in Holman Island have told you of their lives on the land before white contact. Young men and women who are just beginning their own families, have talked of their lives as hunters and trappers. In Holman Island too, perhaps more than in any other community, the evidence of the bounty of the land was visible to you, in the form of caribou, polar bear and Arctic char cached and staked out in and around the houses in the village. Dr. Usher, in his evidence at the formal hearings, further documented both in a qualitative and quantitative sense, the importance of the land to the economy and the culture of the Inuit. Without in any way rejecting his point that you cannot understand the true value of bush food in terms of dollar and cents, we find particularly significant his statement that in 1973/74 the imputed value of fur and food income in the Western Arctic was more than double the income derived from wages in the oil and gas industry by Inuit. Many Inuit in the community hearings talked of their psychological, social and cultural reliance on the land. They explained to you how its integrity was the source of their own identity as Inuit.





The Inuit in their land claims proposal, Nunavut, have proposed that their aboriginal rights to 700,000 square miles of land and 800,000 square miles of ocean be extinguished in consideration of the transfer of 250,000 square miles of lands to which they will have fee simple title including the subsurface down to 1500 ft, such land to be held in a communal form by the community and regional corporations to be established under the terms of the proposal. The proposal lays down criteria for the selection of Inuit lands and of particular importance is the provision that the Inuit may select 50,000 square miles of the total 250,000 square miles in respect to which they can secure the cancellation of existing rights, for example oil and gas leases, subject to compensation being paid the holder of the rights by the Government. Selected Inuit lands can only be expropriated by a special act of Parliament and such an expropriation must provide for compensation in a form of suitable alternative land or its money equivalent. These lands, in other words, would not be subject to expropriation under existing statutes.

The effect of this land regime is that no development except for those which precede by way of expropriation by special act of parliament, can take place on any of the selected Inuit lands without Inuit consent.

The Council for Yukon Indians in its land claims proposal, so far as they affect the energy corridors with which this Inquiry is primarily concerned, has also laid claim by aboriginal title on behalf of the native people of Old Crow to large areas of land traditionally occupied by the Kutchin of Old Crow. The precise terms under which that land would be held is presently the subject of negotiations between the Council and the Federal Government. Although no land use study for the Old Crow area has been presented to the Inquiry, the people of Old Crow at their community hearing last year, with the aid of their own map, described in great detail the areas in which they hunt, trap or fish and which they regard as their homeland, including of course the Old Crow Flats.

The three claims then have a common base in the claim to ownership of large, and in fact compared to southern standards, vast tracks of land and ocean. The basis for this part of the claim and for the extent of the claim is that the traditional subsistence activities of the Dene and Inuit require such extensive areas for the maintenance and growth of this sector of the native economy. Evidence has been given at the community hearings by trappers and hunters who indicate that an area which



they may use one year will not necessarily be used the following year. You will recall that in Sachs Harbour the whole of the north part of Banks Island, while not criss-crossed with trapline routes, was nevertheless identified as a critical area since it was the breeding grounds of the caribou, musk-ox and white fox. Again the migration routes of caribou and their overwintering grounds, for example in the Richardson Mountains, west of Aklavik and Fort McPherson are subject to wide fluctuations. Indeed, just during the two years of the Inquiry's life there has been just such a fluctuation which has had significant effect on both the numbers of caribou taken by the Old Crow and Fort McPherson communities and the distances hunters have had to travel.

These large areas are necessary not only to ensure the continuation of traditional activities of hunting, fishing and trapping but also to support new forms of renewable resource development. They are also, as we understand it, designed to assure that the native people will always have a land based economy not just for this generation but for their generations to come. One of the dominant impressions which we have taken from the community hearings is the native insistence that we look to the future not just in terms of the life of the proposed pipeline but in terms of future generations of native people, a perspective on life which makes a mockery of the stereotyped native person living only in the present. It is a perspective, however, which we find eminently understandable given the evidence of Professor Irving that the Old Crow people had maintained a caribou hunting camp at Klokut on the Porcupine River for at least 1000 years and that evidence had been discovered at the same site of aboriginal men dating back to 27000 years ago.

Essential as ownership of land is to the social contract the Dene and Inuit seek through their land claims, it is only one part of the contract. The other main component, as we understand it, is the devolution to the native people of wide ranging governmental authority to determine what happens in areas vital to their survival as a people. As these have been identified at the community and the formal hearings they appeared to us to be the areas of land use, economic development, education, local government and health and social services. The right to make and implement policy in these areas together with the ownership of land, are the pillars upon which the native people seek self-determination. They are the same pillars upon which the rest of Canada has achieved such self-determination.





The evidence presented to this inquiry has traced historically the pattern of dealings and relationships between whites and natives in the Northwest Territories. The tracing has been done not only by anthropologists and sociologists but, perhaps, most importantly, by the native people themselves. The thrust of the evidence has been that this relationship has been a colonial, intrusive, exploitive one in which native people, their land, their resources, and their lives have been subject in an ever increasing way to the needs and dictates of non-natives.

The first major stage in this relationship, characterized by Professor Helm as the "fur and mission era" involved the native people reorganizing their economy and their yearly cycle around the need to get fur and religion from the Hudson's Bay Company and the Church. Professor Asch has described how, while this still permitted native people to live their lives consistent with their basic cultural values and social organization, it did create a real and abiding dependence on non-native material culture and transferred the native independent economy to one which made native people subject to the fluctuations of an externally controlled commodity market. External control over the native people further increased during this period by the restrictions placed upon their subsistence activities by game laws imposed after the signing of the Treaties, restrictions which the native people interpreted to be major breaches of their understanding of the Treaties.

Professor Hobart has described the pattern of events leading to the collapse of the fur trade after the second world war and the increasing presence and intervention of government and government programs into the life of the North, characterized by Helm as "the government commercial era". Programs such as universal compulsory education, social assistance, health and housing programs and most recently the local government programs, have had far reaching effects. A great deal of evidence both at the formal and community hearings has been directed towards describing the nature of this period and its effect on native peoples and it is no accident that it is in these areas of government intervention that native people are seeking to regain control through their land claims.

Perhaps the education program and system has been the most severely criticized for its attempt at cultural domination of native values by non-natives. Mr. Gillie, former Director of Education for the Northwest Territories, described how the system, designed for white students in the south was





incorporated, holus bolus, to the North with little if any attention to its relevance to the life style and learning patterns of native children. Native people have talked bitterly of how they were taken as young children from their parents and sent to residential schools where they were physically beaten for speaking their language. Mr. Paul Robinson, former Director of Curriculum for the Department of Education for the Northwest Territories has talked of the assumptions behind this system: Native people were destined to become like the rest of us and education was the catalytic agent to hasten this process, a process described by Dr. Hobart as one of "cultural replacement". Mr. Robinson, in his evidence pointed out that while in recent years there has been some mitigation of this policy, in reality, little has changed and that the educational process, despite some lip service to local control, is still guided by non-natives and is geared to non-native aspirations. He referred to the programs of cultural inclusion as tokenism and bitterly compared the \$15 per day spent on this program with the \$1,700 spent on programs which he regarded as nothing more than assimilation. He pointed out that although there has been in existence for a number of years a program for training native teachers, this does not come close to filling 10% of the necessary teaching positions. While it is true that the educational process of the last two decades has had some positive effects in producing the present generation of articulate Dene and Inuit leaders, one of them, Charlie Overvold, speaking specifically of the education system, expressed the view that he, as a Dene, had been caused irrevocable damage and that his education had caused him to lose his language and opened up a deep split between himself and his parents. Many other people have talked about the gap that has opened up between them and their children because of the education system, a gap which is particularly disruptive to a people who value so highly communication between generations.

The Dene and the Inuit have made it very clear that one of the primary objectives of the land claims is the attaining of control over the education of their children to ensure that their culture is transmitted from generation to generation. Governmental control over education is required to ensure that the school curriculum, the language of instruction, the teachers, and the relationship of school to the rest of their lives is responsive to their needs as they see them.

Other evidence has dealt with the need to control local government and to develop institutional structures consistent with native patterns of making decisions. The Dene in particular



have argued that they have traditional political institutions with the Chief and Band Council system and a traditional pattern of making decisions based on a consensus model whereby decisions are reached through a process of community consultation. George Barnaby, a former Territorial Counsellor, in explaining this traditional model stated that in his experience of Territory Council, it was to the Dene an alien body in its procedures, its method of decision making and its priorities. Other Dene witnesses have leveled similar criticism at institutions of local government. Chief Gerry Cheezie and George Kurczurski, former President of the Fitz-Smith Metis Local, described how in Fort Smith, though there is a native majority, the native people do not participate in the running of the town council. They described how even after they had made a conscious effort to secure involvement in a recent election for town council, people simply did not relate to the town council as their institution of government. The reason they gave was that the local government structure, modelled as it was after southern municipal democracy, did not fit in with the Dene ways. Particularly, it ran headlong into conflict with the band council structure to which the Treaty Indians have their primary allegiance.

Wilf Bean, a former local government worker for the Territorial Government, explained the ways in which the southern cultural base of the settlement council model ran into conflict with the kind of local government with which native people would feel comfortable. He explained how the assumption behind the settlement council model was that an elected few would make decisions and take responsibility for the running of the community on behalf of the many, rather than the Dene way of seeking broad based consensus and not relying upon the notion of majority vote as the index of approved action. He explained how the responsibilities which were given to the community, and it could move up to the next rung in the local government hierarchy, depended largely on the existence of an evolving tax base and thus was grounded in notions of private property. He was of the view that the responsibilities given to settlement councils for example, roads, water, sewage and garbage, were only regarded as priority issues in a private propertied tax based culture. He suggested that the priorities which would naturally be identified by the native communities he was familiar with would revolve around issues of education, care of the elders, organization of community hunts, and control of hunting and trapping areas, all of which were presently excluded from the responsibility of the local councils.





Howard McDiarmid in his review of Development and Political Realities 1968-1976 pointed out that the problem is compounded by the fact that the municipal model of local government serves well and is easily co-opted by the interests and the concerns of Euro-Canadians moving into the Northwest Territories. He concluded that the combined effect of the native antipathy to the municipal model and the way it lends itself to being dominated by non-natives contributed in a significant way to the political exclusion and community isolation of the indigenous people. It is no surprise therefore that in the consultation meetings leading up to the preparation of the Philosophy Paper, issued in 1975 by the Department of Local Government, those communities where Treaty Indians were the majority, argued that the Band Council should be the dominant political institution.

The Inuit, while from the evidence at the community hearings appearing less dissatisfied with the municipal model, having no existing political bodies similar to the Chief and Band Council system, have by clear implication in their land claim proposal Nunavut, decided that the present structure of local government can be improved to better reflect the needs and interests of the Inuit by the creation of additional institutions of government and administration such as Community Hunters and Trappers Committees and Community and Regional Development Corporations. The proposal also in effect adopts the evidence of Mayor Hobson of the North Slope Borough in Alaska that development of local government is an important product of the land claims movement, and that control of local government is an important economic tool with which to protect the native interest in resource development.

A third area which has been identified by the native people as one which they seek control through the land claims is the delivery of services whether they be housing, health or social services. Much evidence has been given at the hearings concerning the present services and a persistent theme and basic criticism has been that these programs, as with education and local government, are based on southern models without much thought to their relevance to the special needs of the people of the North. Evidence has been given of the low rental housing program which has provided hundreds of prefabricated homes for native people with oil furnaces which are rented at rates depending on means. Such a program is based upon a sound humanitarian desire to provide native people with shelter and the renting structure is premised on the sound southern assumption that the people of the bottom rung of the economic ladder will





not be able to afford their own homes. This program and its assumptions have been heavily criticized by the native people. They have told you that they have always owned their own homes whether they consisted of skin tents or log houses; they have always provided for their own fuel in the form of wood or seal oil. Their traditional shelter was designed to reflect their nomadic life style and was well suited to it. They have told you how they have had no control over the design of the houses built under the low rental program. These homes are designed, prefabricated and in many cases assembled by people from the South. The use of local resources, such as wood for log houses, has been largely ignored. You have heard how the supposed benefit of providing modern furnaces fueled only by oil has hidden social costs because it means that the native person is deprived of his independence: because not only is he no longer able to supply his own fuel but he may not be able even to repair his own furnace.

Professor Rushforth, in his evidence, also explained how the introduction and allocation of low rental houses in Fort Franklin completely ignored and thereby undermined the traditional social organization of the Bear Lake people.

The social assistance program has also come in for some heavy criticism at the community hearings. You will recall Mary-Rose Drybones, the Dene social worker at Fort Good Hope, describing the welfare system and the debilitating effects she saw it having on her people. In describing the social assistance programs and also health programs the native people, without denying that these programs have made important contributions to their material and physical well-being, have told you that the assumption behind these programs, that the native people will be passive recipients of services, has done great psychological damage to the independence they value so much. As we understand it, the control of these services by native people through the land claims is designed to reinstitute that independence of spirit.

A fourth area of government activity over which the native people seek control is that of land use planning. You heard evidence at the community hearings regarding the present system and its primary vehicle, the Land Use Regulations. Under these Regulations which cover a wide range of land use activity, there is provision for community consultation. Starting from the very first community hearing in Aklavik, you have been told how in many cases the communities are consulted in a time frame which



virtually precludes their making any meaningful response and how in any event, the prevalent feeling is that their wishes will be over ridden. C.O.P.E. presented a panel which documented the process of consultation of both government and industry and criticized it on a number of grounds, in particular, that the institutional framework for consultation was not of the natives making and, the lack of ultimate control of what happens at the local level. As we understand the evidence, ensuring that local control and indigenous institutional frame work are two objectives of the land claims.

Very closely related to the area of land use is that of economic development and the need for control in that area has been stated as one of primary importance at both the community hearings and in the formal hearings. Dr. Usher and Dr. Asch have described the history of the traditional native economy and have talked of the emergence of the dual economy with traditional economic activity as one sector and wage employment as the other. They described how the two are very much related since many native people undertake seasonal wage employment in order to obtain capital for ongoing participation in the traditional sector. The native people have argued that the primary interest of the government in the Canadian North has not been to nourish the traditional sector but to develop the non-renewable resource sector. As Father Fumoleau documented, the *raison d'être* of the Treaties in 1899 and 1921 was gold and oil. In 1899 with Treaty Eight, the purpose was to clear the way for the gold rush. In 1921 with Treaty Eleven to permit unimpeded by any native claims the recovery of the oil at Norman Wells and the anticipated discoveries elsewhere up the MacKenzie Valley, Father Fumoleau pointed out it was the oil at Norman Wells, uranium at Port Radium and gold at Yellowknife that occupied the attention of government and business. Father Fumoleau's researches dealt with the history until the second world war and since that time the Federal Government has vastly increased its attention in both planning and financial encouragement of the non-renewable resource sector, particularly the mining and petroleum industries. To Father Fumoleau's list we must now add the Pine Point lead-zinc mine, the Pointed Mountain gas field, the Nanisivic Mine at Strathcona Sound and of course the extensive oil and gas exploration throughout the whole Mackenzie Valley and particularly in the Mackenzie Delta and the Beaufort Sea. The criticism of the native people is that little, if any, attention and even less capital has been given to the renewable resource sector whether it take the form of supporting the existing regime of hunting, trapping and fishing or the development of new





initiatives in this area. The native people have presented substantial evidence that it is the renewable sector which they see as the one which compliments their life-style, builds on their own experience and knowledge of the land and the animals, and which thereby permits economic growth consistent with their values and cultural preferences.

Perhaps the best example of the disproportionate concentration of government attention and financial support to the non-renewable resource sector can be seen from comparison of what has happened at Pine Point and Fort Resolution. You will recall that you visited these communities on successive days last October as part of the community hearings process. The Pine Point Mine was built pursuant to an agreement between the Federal Government and Cominco under which the Federal Government spent in excess of \$100,000,000 in the building of the Great Slave Railroad whose primary purpose was to transport ore from Pine Point to the South. Additional financial support was given for the building of the infrastructure of the mining town and tax and other concessions were granted for the first years of production. The Pine Point operation operates on almost 100% white southern employment and for the areas over which the mining operation is conducted, the land is rendered quite useless for any other economic activities because of the techniques used in the operation. By contrast, in Fort Resolution, you saw and heard about the local sawmill, which is operated in such a way that Resolution men can work on a seasonal basis compatible with continuing their hunting and trapping. Apart from the manager, all people employed at the sawmill are native people from the local community. Mr. Orbell, the present manager explained that with proper resource management, the available timber was capable of sustaining the development for a minimum of forty years and presumably, with increased research into reforestation, the period could be increased. The sawmill, however, is in severe trouble, not because it does not produce high grade lumber, but because there is no governmental support for the operation with the result that while 3 million board feet sits idle in the yard, lumber for construction in the North is imported from Alberta and British Columbia. The Fort Resolution people also explained to you that Pine Point residents were pushing them off their own land; that areas where they had traditionally gone, such as the Little Buffalo River where they had permanent camps, were being rendered both unproductive and unpleasant because of the purely recreational use by non-natives from Pine Point.





The Fort Resolution sawmill is an example of a renewable resource development which is compatible with traditional activities and the native life-style and yet which generates community based wage employment to obtain necessary cash. Other evidence presented by the native organizations has shown that economic development projects which have been successful with native communities are exactly those ones which do respect native values and patterns of organization and which integrate modern technology and means of production with traditional knowledge. Dr. Stanley, in reviewing a series of research studies conducted in the United States which compared a wide range of economic development projects undertaken on Indian reservations and analyzed the reasons for their success and failure, concluded that it was those developments which were compatible with native concepts of land use and which relied upon indigenous patterns of social and communal organization which seem to work best. He gave as a primary example the aquaculture project developed by the Lummi Indians on the Pacific North-West Coast in Washington. This was a project which built upon the traditional sea-oriented activities of the Lummi and was organized so that it involved as many people as possible in the Band so that the project reinforced ideas of cultural integrity and community cohesion. Although it relied upon the best of modern scientific knowledge, that knowledge built upon the traditional knowledge of the Lummi Indians. In a similar vein, Mr. Currie called by C.O.P.E. talked of the aquaculture project at the Bras d'or Lakes in Nova Scotia where a project similar to the Lummi project has been developed successfully by Micmac Indians. Witnesses called by the Indian Brotherhood, Mr. Ruttan and Mr. T'seleie concurred with Mr. Currie and Mr. Snowdon in the judgement that the renewable resource sector in the Northwest Territories was quite capable of providing a viable economic base for the North. Given imagination, initiative and capital it could provide meaningful jobs and income for native people which would be either a natural development of the existing traditional activities or if a new initiative, would be consistent with the basic values and organization patterns of a land based culture. Mel Wathins, in his evidence in tracing economic history in the North pointed to the fact that there was no theme so compelling as the process by which land based man, whether agrarian or nomadic, was turned against his will into industrial man and that he saw the development and growth of economic activities designed by native people and consistent with their values, as vital to subvert this process and that the land claims was designed to do that very thing.



Witnesses have explained how the viability of an alternative economy based on renewable resources requires not just control over those resources and the necessary capital for development, a substantial degree of control over the non-renewable resource sector because the latter if not controlled can do irreparable damage to the former. You saw for yourself when you flew over Pine Point that renewable resource harvesting is clearly not possible in the Pine Point area and evidence was given to you by Johnny Klondike in Fort Liard that the effect of the Pointed Mountain gas field operation has been that he has had to withdraw from that area because it is no longer productive.

There are other important reasons for control over the non-renewable sector. One of the most important, detailed by Mel Wathins and Arvin Jeliss is to ensure that a fair share of the economic rents of non-renewable resource development accrue to the native people to provide necessary capitalization for the renewable sector. This need to obtain economic benefits from the non-renewable resource sector and the need to build up the long term viability of the renewable resource sector is also intimately linked with the long term future of the native people. The oil and gas play in the Northwest Territories may last 30 years. After that the oil and gas will be gone as will the income from employment associated with it. As we understand the land claims settlement, one of its primary objectives is to ensure that the native economy and the native people retain their integrity and independence in the post oil and gas world.

As Professor Asch pointed out, in seeking this they are seeking no more or no less than what the Province of Alberta seeks in setting up its Heritage Fund to ensure the long term future of Albertans in their post oil and gas world.

Before we turn to the question of prejudice, we would emphasize that while we have teased apart the constituent elements of the claim to self-determination, the claim must be regarded as an integrated one. Many people in the communities have told you of their desire to continue their traditional pursuits. This would require changes in the present school curriculum and in the school year to permit their children not only to learn the new but also the traditional ways and to go out with their parents into the bush without disruption to their schooling. Many people have also expressed the wish to move out of the communities back into the bush on a more or less permanent basis and of course this has already occurred in some places such as North Star Harbour. For this option to exist as a viable alternative,





however, it is not just the educational policy that requires changing but also housing policy, so that loans can be made available for permanent log homes out of the community; communication policy, to ensure an effective radio service to these communities; transportation policy, to ensure cheap and guaranteed travel to and from bush camps; land use and economic development policy, to ensure that the areas upon which people living the traditional life depend are not damaged by alternative activities and to ensure that financial and developmental support is given to production and marketing of the traditional economy. This is but one example of how the pursuit of a native life-style requires control over a whole range of activities presently under the control of non-native governmental authorities.

2/3 THE NATURE OF THE PREJUDICE AND THE IMPLICATIONS OF  
CONSTRUCTING THE PIPELINE PRIOR TO SETTLEMENT OF NATIVE LAND  
CLAIMS, AND THE MEASURES WHICH CAN BE TAKEN TO AMELIORATE OR  
AVOID THAT PREJUDICE

What we propose to do in considering the nature of the prejudice and the implications of prior development of the pipeline before land claims is to follow the same breakdown of the constituent elements of the land claims and in relation to each element ask these questions: "In what way will the objective behind this part of the land claims be rendered impossible or more difficult of achievement if the pipeline proceeds before settlement?" "Can this Inquiry, through its terms and conditions, avoid or ameliorate that prejudice?"

The Claim to Collective Ownership of the Traditional Home Land

The most obvious nature of the prejudice the Dene and Inuit seek to have recognized is that should the pipeline precede settlement, then the land required for the pipeline corridor, associated facilities and related developments will all have been selected and will be thereby precluded from selection for use and occupancy by the native people. Evidence from Alaska, where the whole pipeline corridor was excluded from the land selection process under the Alaska Native Claims Settlement Act, indicates that this is indeed a real prejudice to the extent that lands important to native people are within the corridor.





We think that it is appropriate to test the precise nature of this prejudice by reference to the Nunavut proposal. Under that proposal it will be recalled that the Inuit may select 250,000 square miles of land to which they would have the fee simple title down to 1,500 feet. No development involving the subsurface below that depth could take place without their consent or without a special act of Parliament expropriating their interest. Within that area there would be 50,000 square miles in which they could request the extinguishment of existing rights subject to compensation. It seems to us that there are some areas within the proposed pipeline route of Arctic Gas and Foothills which are viewed as of such fundamental importance to the native people that they would at least be included within the 250,000 square miles, and would in some cases be included within the 50,000 square miles where existing rights could be extinguished. It is quite clear from this that to the extent that the purpose of this land selection would be to preclude development, there is clear prejudice in a prior development which thereby precludes the native selection.

From the evidence that we have heard in the communities and in the Delta Phase one such area where cancellation of existing rights might be sought is the calving grounds of the beluga whale in Mackenzie Bay and Shallow Bay. Other examples of areas which might be selected under such a scheme in the Northern Yukon are the Old Crow Flats and for the Dene the areas around Travaillant Lake and Willow Lake.

Is there any way to avoid this prejudice? To the extent that this Inquiry recommends terms and conditions which adequately protect the renewable resources in the areas of concern, for example, a recommendation that Shallow Bay and Mackenzie Bay be designated a whale sanctuary or that it be set aside as an area of specific environmental and social concern under the 1972 Pipeline Guidelines No. 4 in which no oil and gas development or pipeline activity be permitted, then to that extent the basis of the prejudice could be removed. This removal of the prejudice of course assumes there being a coincidence of the basis for exclusion from the area of pipeline construction from the point of view of the Inquiry and its terms of reference and the basis upon which the native selection would take place. There are very real problems with assuming this basic coincidence. One of them is best exemplified in the evidence of Father Labatt of Fort Good Hope who talked in his presentation at the community hearing, of the spiritual dimension that the land has for native people. There are areas and places not only of economic importance to



native people but also those which have a special spiritual and religious meaning for them and which are important to their history, myths and legends. This is reflected in the rich variety of place names they have evolved, a richness which, by comparison, renders our cartography barren. In making their land selections the native people would make use of this unique cultural knowledge. Clearly, this Inquiry does not have that knowledge. There is a further problem; that because the native people have refused to make the assumption that a pipeline will be built, they have not regarded it as a priority in these hearings to identify for subsistence purposes, all the areas of most importance to them, on the assumption that the pipeline can be built in other areas.

Because of these problems it is our view that there is not sufficient evidence before the Inquiry to permit you to identify all the areas which are of primary importance to the native people and which they would seek to have excluded from the pipeline corridor. While there are some areas where you can do this for some purposes, we are not satisfied that you can do it throughout the pipeline corridor. In any event from the native people's point of view your selection of the lands which they might take under their land claims would be a clear, albeit benevolent, abrogation of their right to self-determination.

Again, using the Inuit proposal as a model to test prejudice, S.608 of the Nunavut proposal states that the Government of Canada would not object to land selection of the Inuit within a 25 mile radius of communities unless matters of vital national importance are involved. Assuming that the Dene in their land claims negotiations become involved in land selection in some form, either because the Government of Canada rejects their claims to 450,000 square miles or because, while recognizing their claim, the Dene are asked to order their total land base into development zones, the Dene might well include the areas within 25 miles of the villages as areas in which no industrial development should take place. Where the present proposed route is within 25 miles, as it is for many of the Mackenzie River Valley communities from Good Hope down to Jean-Marie River, the land claims negotiations clearly would affect route selection. If that route selection took place prior to negotiations it is quite clear that the negotiations would be to that extent prejudiced.

Now again, it can be argued that to the extent that the communities have expressed their view on how they feel about the





proximity of the pipeline development near to their communities, this concern could be incorporated in the terms and conditions of this Inquiry so as to avoid the prejudice. The same difficulty, however, confronts us here in that while in some communities the people have spoken very clearly about how they feel regarding the proximity of the pipeline to their villages, they have not chosen in all cases to tell you where they would like to see the pipeline go. Many people have said they do not want the pipeline to go anywhere. Many others have said they are not prepared to discuss the matter until after their rights to the land have been recognized. Now some people might say that this is simply a strategy. It is our view that this attitude was not merely the reflection of a strategy of the native organizations but was a genuine feeling of people in the communities that a fundamental reordering of their relationship with the Government had to precede such questions as to where the pipeline would go. Anyway, whether it be a strategy or an expression of genuine feeling, the fact is that we do not feel that there is enough evidence before you to enable you to make a route selection which would take into account the full range of factors which the native communities would bring to bear on the question were they to deal with the issue after their land claims have been settled. At that point in deciding where they would be prepared to have the pipeline route, assuming they were prepared to have it at all, they would have to take into account the importance to them of being able to participate in the development without extensive travel away from their communities as against the importance of ensuring that the camps are not so close to their communities as to permit white workers coming into town. They would also have to consider the extent to which they wanted to take advantage of pipeline facilities such as wharfs and modular camp units. There are of course many other factors and we are of the view that, from an evidentiary point of view, you cannot actually make that choice for the communities, quite apart from the point that we made about the prejudice your selection would itself do to the overall claim of the native people to determine these matters for themselves.

There is one other important aspect to the question of prejudice to this part of the land claims. Douglas Sanders in his scholarly analysis of the legal history of the land claims issues in Canada and in the Northwest Territories in particular, dealt with the question raised by some people who ask how can there be prejudice since there is provision in existing legislation for expropriation of land required for a public interest project such as the pipeline. Mr. Sanders pointed out two things, the first





that expropriation of Indian lands is much more difficult and much more narrowly circumscribed than extinguishment of non-Indian lands. This fact is reflected indeed in the Nunavut proposal where it is provided that a special act of Parliament is required for expropriation of Inuit lands and therefore resort could not be made to existing powers of expropriation contained in general legislation, including legislation which would permit expropriation of a pipeline corridor. The second point Mr. Sanders made was that even if a particular pipeline corridor was regarded as necessary in the public interest, the nature of expropriation might be very different before and after the land claim settlement, depending very much on the nature of the settlement. Thus, if under the land claims settlement, land was held by native community and regional corporations and the terms of expropriation under the settlement called for replacement of land of equivalent utility this would result in a different scheme of compensation than that normally found in expropriation statutes, which are based upon notions of individual private property. In essence, therefore, the argument that it does not really matter whether the expropriation, if it is to take place, takes place before or after the land claims settlement, is too simplistic an approach. It matters very much depending upon what shape the land claim settlement takes. Therefore to go ahead with the expropriation before settlement under the existing legislation, which does not take into account any different land holding system such as that which may well come out of the settlement, inevitably limits the flexibility of the settlement.

The Claim to control over Political Institutions, Education, Social and Health Programs, Land Use and Economic Development of both Renewable and non-Renewable Resources

An overriding prejudice which the native people fear to their claim to self-determination if the land claims proceeds before settlement is that the pipeline will bring in its wake a new wave of white outsiders rendering them strangers in their own land, a process which has been the common historical experience of native people throughout North America. They fear that the increase in non-natives will not only reinforce the existing structure of government, but once they are in a minority position, their constitutional claim to self-determination will be indelibly undermined.



## Native Land Claims

In Alaska, evidence called by Arctic Gas identified uncontrolled in-migration of non-Alaskan residents as the primary source of many of the social problems caused by the Alyeska Pipeline, such as pressure on available housing, social services and schools and uncontrolled urban sprawl in Anchorage and Fairbanks through tent and trailer camps.

Mr. Trusty, of Arctic Gas, predicted that these negative effects would not occur in the MacKenzie Valley Pipeline project not only because of different hiring practices of Arctic Gas (hiring in the South as opposed to the North), but also because, in contrast to Alaska, there was in the Northwest Territory a strong centralized governmental presence which would be able to control land use, housing, social services and education because it owns most of the land, builds or rents most of the housing and provides all the services. That may be so and of course we have made submissions elsewhere regarding these different areas, to ensure that negative social effects are kept to a minimum. But does not Mr. Trusty's response confirm the fear of the native people that a large development project such as the pipeline will further entrench and indeed require the growth of Government control over major aspects of their lives, if the impact of the development is to be kept to an acceptable level. Given such an entrenchment and growth in the present non native bureaucracy, the chances of achieving a transfer of power to native political institutions, one of the major objectives of the land claims, would be made much more difficult after the development. The combined effect of entrenchment of the existing government structure and a shift in population from native to non-native majority would put in real jeopardy the kind of land claim settlement the native people are presently seeking.

While the effects of increased in-migration and the entrenchment of the existing government structure extends to many of the areas in which native people seek control through the land claims, it is necessary to look at the particular effects in the different areas. In terms of local government, given that the development will cause increased in-migration of southerners, even if controlled so that it does not cause the problems it has in Alaska, such in-migration will reinforce the southern based municipal structure. The fact that the municipalities in their evidence to the Inquiry have stated that they would look to the project, particularly the associated facilities located within their jurisdictions, to extend their existing tax base, clearly shows how the existence of the pipeline will deeply entrench the municipal structure.





## Native Land Claims

One further point; to the extent that the land claims include proposals to limit voting in local government to long term residents of the North, the effect of a prior start of the pipeline before the land claims would be to swell the population of white southerners who would quickly gain voting rights under the present system, and thus render the prospect of legislating long term voting requirements that much more unlikely.

The effect of increased in-migration of white southerners will be similar in the area of education, since it seems clear to us that, unless there has been a change in expectation caused by a restructuring of relationships between white and native through the land claims, southerners coming up in the wake of the pipeline will expect their children to get a similar education to that available in the South, should they decide, and the experience seems to indicate that most of them will, to leave the North

The process of entrenchment of the way things are presently done will also take place in the social services. These services will have to expand, we are told, to deal with the anticipated increase in alcoholism, crime, family break-down and other forms of social disorganization which experience in the North and elsewhere, shows to be associated with large scale development. This will mean more social workers, more police, more alcohol rehabilitation workers and consequent increase in bureaucracy.

But cannot all these prejudices be avoided by recommendations of this Inquiry short of a land claims settlement. As an example, let us look at the last of the areas we mentioned, that of social services. To deal with the anticipated problems of social disorganization cannot a recommendation that funding be provided to native controlled rehabilitation programs, such as the Koe-Go-Cho Society at Fort Simpson and the Peel River A.A., help to develop native solutions to these problems, short of transfer of control of social services to the native people through a land claim settlement. We have in fact made such recommendation but we feel that it has very real limitations and does not really meet the question of prejudice.

Those limitations are that the sheer scale of the pipeline impact on the social fabric of the communities may overwhelm the capabilities of these very recently instituted native programs. As we understand them, they do not depend, as do the non-native programs, simply on the number of people they can hire into their bureaucracy but rather on their ability to draw on the inherent





strengths of the community. Rene Lamothe of Fort Simpson talked about this organic approach to social services, where solutions to problems of living are sought within the community, rather than in the "delivery" of services to the community. Claude Demientieff also described the underlying principles and contours of such an approach being tried in native communities in Alaska, where the traditional healing arts are brought to bear on contemporary problems. To the extent that the pipeline project adversely affects the structure of the communities it impairs the efficacy of the work of these native rehabilitation programs.

The other limitation, and perhaps the most serious one, is that this approach misconceives the real causes of the problem. As several of the psychiatrists called by C.O.P.E. testified, the high rates of alcoholism, suicide and family breakdown in the North are in good measure, the responses of people who have lost meaning to and control of their lives. A pipeline before the land claims would be to many native people a final affirmation that they have lost control of their land and their life. Whether that be true or not, that will be their perception. No amount of psychiatrists or shamans can cope with that. If the land claims on the other hand does precede the pipeline, there will still of course be problems, since contrary to what many people think, the land claims settlement is not a magical solution to the problems of life in the North, any more than Confederation was to those in the South. But if through the settlement the native people regain both the perception and reality of control they feel they have lost over their lives, then that itself will stop the process of marginalization, which, according to Hugh Brody, is the root cause of such problems as alcoholism and would permit indigenous solutions to these problems to be developed. That would take some time. The pipeline before land claims approach therefore in our submission will both compound the real problems and undermine their real solution.

Because the land claim is a claim for cultural survival the effects on education and language of prior pipeline development could be regarded as a litmus test of prejudice. The native people, as we understand the evidence from the community hearings, seek control of the education process to ensure that their children grow up with an understanding and respect for the language, knowledge and values of the native world as well as acquiring a firm base in the languages and knowledge necessary to permit them to participate in political life in the rest of Canada, so that their children can make real choices as to their



future, nourished by the past. Dr. Krauss and Dr. Ritter both testified about the central role of the native languages in maintaining the integrity of native cultures and their vital importance in the education process. This importance of language is recognized in the Nunavut proposal, which would make Inuktituk an official language and it is highly likely that the Dene proposal will have a similar provision.

What is the likely effect of prior development of the pipeline on language? Dr. Krauss described how the native languages are perfectly capable of development to accommodate modern as well as traditional knowledge and technology and described what was involved in that process. He suggested that to ensure the survival of native languages, it was not only necessary to pass through the phases of developing a writing system, language expansion and general literacy but also a fundamental change of attitude in terms of white responses to natives and of native self-perception was required. Dr. Krauss was of the view that the effect of starting the pipeline construction before this program for survival was well under way would be extremely prejudicial. The nature of this prejudice would come from the continued erosion of native language which the in-migration of a great number of whites would bring, in the absence of any established language program and in the absence of a basic change of attitude.

Both Dr. Krauss and Ethelou Yazzie, Director of the Rough Rock Navaho School, stated that one of the most important institutional mechanisms for guaranteeing the survival of the language and the culture would be a bi-cultural, bi-lingual school system. As we understand the evidence, the establishment of such a system under native control would be a primary object of the land claim settlement. It seems to us that the prior construction of the pipeline, with the tidal wave effect such an enormous development would have in pointing the future shape of things, particularly with the projected increase of non-native parents in the region, would not be fertile ground for the introduction of bi-cultural programs. We have asked ourselves how seriously would native children take the importance of their own language, of their own history and of their own traditional technology, when the attention of everyone around them is focused on a project which, in many ways, is the ultimate expression of non-native technology and values.

We have made elsewhere recommendations for community control of schools and curriculum, but while they may to some extent





mitigate the prejudice if the pipeline proceeds before land claims settlement, they are not likely to have a great effect on changing the basic attitude of non-natives coming into the region nor are they likely to go far in improving the bi-cultural climate in the North.

There is one term and condition that this Inquiry could recommend which is designed to ensure the linguistic and cultural survival of the native people in the event of a pipeline and which, since cultural survival is the central objective of the land claims, seems therefore capable of avoiding the prejudice of pipeline construction before a land claims settlement. This was developed by Dr. Krauss and was to the effect that before the pipeline goes ahead, the specifications and working documents for construction and operation of the pipeline be available in the native languages and that these documents be understood by the native people and anyone directly associated with the project. To satisfy this condition, there would, in Dr. Krauss's analysis, have to be the development of a writing system, general literacy in the native languages and an expectation that the native languages be the dominant language of the region. There would also be required a legal declaration of language rights. Such a term and condition cannot, of course, be satisfied at the present time and the program outlined by Dr. Krauss would, in his view, involve at least a five to 15 year period of implementation.

While this term and condition seems independent of the land claims settlement, on analysis, it is very much related since as Dr. Krauss stated, his program for linguistic survival was likely to succeed only if the institutions of education for native people were under native control, which is one of the constituent parts of the land claims. Also he felt that the settlement of the claims could play an important role in identifying, legally and symbolically, the necessary change of attitude that the native language would have on primary languages of the region.

We would now address ourselves to the nature of the prejudice of prior pipeline construction to the claim to control over economic development. This, as we have seen, has a dual focus, the development and control of a viable renewable resource sector and control over the non-renewable resource sector to ensure its compatibility with the renewable sector, to collect economic rents for non-renewable activities conducted over native land and, where it is sought, to participate in the management of the non-renewable sector to build up experience to permit native management in the future. To the extent that one of the





objectives of the land claim settlement is to ensure that a renewable resource development is a viable option for native people, given that very little research or capital has been given to the designing and planning of this sector (Ruttan and Currie) it would seem to us that starting a massive project in the non-renewable sector, before the renewable sector has been established, would undermine the option which the renewable sector is designed to give. Mr. Ruttan in his evidence stated that an integrated renewable resource development program would require residents of each community to participate as administrators, professional and technical resource managers, supporting clerical and technical staff and as owners and managers of resource based enterprises. The siphoning off effect of pipeline employment with its high wages is likely to be prejudicial to the development of this sector given the level of participation it requires.

It is also important to bear in mind that once the pipeline is built, the primary flow of capital and energy will be to the non-renewable resource sector. Once the corridor is established it is likely that the gas line will be looped, the oil line constructed and increased exploration will continue. In such a climate the likelihood of shifting priorities through the land claim settlement to renewable resource development is rendered that much less likely.

The second feature of the land claim in this area, the control over non-renewable resource development, would clearly be prejudiced if that control is not permitted on the pipeline project because it is constructed before the land claim settlement. However, to the extent that control is required to prevent degradation of the renewable resource base, then, to the extent that the Inquiry achieves that objective through its terms and conditions, this basis of prejudice is very much reduced. Some prejudice, however, remains since the pipeline is the first major development in a proposed cycle of development and the native people will have lost the opportunity to be the main actors and gain vital experience in this control process at the beginning of that process. Against that it can be argued that the Inquiry, having as it has the benefit of the best technical and professional expertise available in Canada, is in this particular case in a better position to ensure the non-degradation of the renewable resource base. While this response could be met with the argument of the native people that given the necessary capital they would be quite capable of setting up their own Inquiry drawing on available expertise, the fact is



that we have had this Inquiry and we are confident that its recommendations will ensure, to the extent that it is possible, that a pipeline, if it is to be built, will not harm the renewable resource base. There does still remain a central concern that relying upon the process of this Inquiry, rather than their own decision to guarantee their resource base is a deference, once more, to outside decision-making.

There is, however, possible prejudice in the danger that the machinery for control and regulation of the pipeline which this Inquiry recommends may further entrench and reinforce non-native bureaucracies and make it that much more difficult to change the regulatory system through the land claim settlement, should the native people desire a different structure, as they may well do, to integrate the regulatory process into the institutions they design through the land claim settlement.

The other reason for the need for control of non-renewable resource activity is to ensure for the native people benefits from this activity. These benefits, as Professor Thompson indicated, could take the form of royalties and or the development of management expertise through joint ventures on projects. The royalty structure is a central feature of the Nunavut proposal.

If the pipeline precedes an agreement on royalty sharing with the native people then quite obviously until such an agreement takes place the native people will receive no benefits. This would also mean that the needed capitalization for renewable resource development would also be delayed. It is submitted, however, that it is possible to devise interim provisions which go some way to safeguard the native interests prior to a land claim settlement. One such device would be for the Federal Government to declare itself a trustee for the native people of non renewable resources and royalties therefrom pending a land claims settlement. A similar solution was advocated in 1969 by Professor Thompson for the Northwest Territories to avoid the prejudice and the ensuing bitterness which resulted when the Prairie Provinces were admitted to provincehood without recognition of their right to ownership of natural resources. While this does go some distance in preserving the benefits for the native people pending settlement of the land claims, it does assume, since the pipeline will have already proceeded pursuant to an agreement with the Federal Government, that there would have been no basic change in the royalty rates as a result of negotiation with the native people. Part of the case of the





Indian Brotherhood and Metis Association was that the present royalty structure for oil and gas production has the result of leaving "super profits", that is, profits over and above reasonable return on capital, with the oil companies, and that therefore in their land claims proposal, they might well claim the right to recoup these super profits through increased royalty rates. It is highly unlikely that such a retroactive upward rise in royalty rates would be possible once the project has started and tariffs had been set accordingly. To that extent, therefore, this function of the land claims settlement would be prejudiced.

The third reason given for native control of development of the non-renewable resource sector, to permit their participation in the management of development projects, is best exemplified in the proposal made to you by the Council for Yukon Indians, in which the Council recommended that any permit to build a pipeline be granted to the successful applicant on condition that it incorporates a public company, the majority shares of which would be held by native people in the North with minority shareholding held by the applicant. The Nunavut proposal also has legal and administrative structures whereby the native community or regional corporations could permit development on their selected lands under the conditions of an agreement for consent, which would contain wide-ranging provisions relating to the participation of Inuit in the development activities whether in terms of management, employment, environmental stipulations or royalties.

At the present time, the native people do not have either the necessary capitalization nor the organizational structures to participate effectively in joint ventures on projects such as the pipeline and, as we understand it, the land claims would be the vehicle for the establishment of such structures and capitalization, should the native people desire this form of participation in the pipeline project. The Council for Yukon Indians proposal does not gainsay this, since it is the premise of their recommendation that the land claims will have been settled prior to the incorporation of the native controlled Pipeline Development Corporation. Certainly based upon the Alaskan experience, as related by Mayor Hobson and Emil Notti, one of the results of the Alaskan Land Claims Settlement Act with its establishment of native corporations has been the initiation of a variety of joint ventures on the Alyeska pipeline (such as the maintenance of the haul road north of the Yukon River) which, had it not been for the land claims, probably would not have taken place.





The prejudice of prior construction of the pipeline therefore to this objective of the land claims, of real participation in developmental projects other than at the lowest level, would again be the missed opportunity to participate in the management of the pipeline, as the first of a series of such projects in the North.

Could not this prejudice be mitigated by the Inquiry recommending that prior to commencement of construction, financing be made available for the establishment of native development corporations and that such corporations be given preference in joint ventures with the successful applicant. We have some real reservations however, about the viability of such a recommendation given the likely climate of opinion in the North if the pipeline were to proceed before the land claims settlement, since it would then be doubtful whether the native people would be prepared to direct their energies into business organization which would be geared to the building of the pipeline, and which would, to some extent, undermine the integrated approach to economic development which they have sought through the land claim, particularly in the development of the renewable resources sector. From their point of view, it would seem that joint venturing on the pipeline by native people should take place only at such time as equal opportunities for participation in the renewable resource sector were available so people were in a position to really choose what direction their lives and their communities took.

We have said before that the constituent parts of the land claims are properly regarded as an integrated whole. An example from the Alaskan experience which illustrates both the relationship between real participation in economic development projects and education and the importance of the land claim settlement before development, is the work of the Tanana Chiefs Land Claims College in Alaska. As described by Claude Demientieff, the College is a native controlled university without walls, and its basic philosophy is that the educational experience should be framed around the students' lives consistent with native learning patterns. He explained that one of the functions of the College was the accreditation of courses offered by other bodies. An example of this could be a union training program for work related to pipeline construction. Part of the accreditation could involve modification to the program to ensure its suitability for native participants which could include preparation of teaching materials and instruction in the native languages. Mr. Demientieff suggested that the combined effect of



native people knowing that in taking the course they would be getting credit from their own college and that the course was designed for them, made successful native participation in these programs much more likely than under the existing system training programs and in turn meant more meaningful participation in any development project.

The Tanana Chiefs Land College was developed after the Land Claims Settlement in Alaska pursuant to authority over education given native people under the Indian Education and Self-Determination Act and its successful operation has been contingent upon both the fact of Indian control over education and the recognition, by native and non-native alike, that the native people have the right to guide their own destiny and influence other agencies, whether they be unions, oil companies or governments, to ensure the compatibility of their actions and programs with native aspirations. It is our view that without both the transfer of control and the recognition of the legitimacy of that transfer, programs such as the Land Claims College are not likely to develop in the Northwest Territories and Yukon.

Before concluding our submissions on prejudice, there are some very general considerations which, while they do not deal with any particular constituent of the land claims, permeate them all. The land claims of the Dene and the Inuit are premised on a claim to self-determination; the land claims are seen as a major break from the settlements which have been made with native people in the past. They seek a guarantee of the right to the cultural survival and integrity of native people of the North through a new Confederation in accordance with the spirit of 1867. The people of the Mackenzie Valley, Mackenzie Delta and the Northern Yukon have clearly placed their hopes in the land claims to fulfill their vision for the future. The settlement of the land claims is therefore a real and symbolic event in their relationship to the rest of Canada.

You have heard from the Dene that the Government has never lived up to its promises under the Treaties and cannot be trusted to keep its word. You have heard from Vince Steen how the cumulative experience of the Inuit has led them after successive waves of whalers, white trappers, traders, government administrators, and most recently, the oil industry, to have a basic mistrust of the white man. In the eyes of the native people, we have abused their land and resources, we have ignored and trampled on their traditions, we have increasingly





circumscribed their right to control their own lives. They have said at these hearings that it has to stop and it has to stop now before we begin, if indeed we are to begin, construction of the largest development project undertaken in the white man's history. The pipeline then too has become a real and symbolic event in terms of the relationship between the white and native worlds. In our submission, for the pipeline to proceed before the land claims means nothing less, within this framework of analysis, than the triumph of our reality, our values, our priorities over theirs in the same way as Professor Page described the CPR in the 1880's as the symbolic triumph of white industrial society over the traditional life style of the native people. If a decision is made to build the pipeline prior to the settlement of land claims, it will be a clear demonstration to them that the government is not prepared to give them the right to govern their own lives, for if they are not to be granted that right in relation to the decision which more than anything else will affect their lives and the lives of their children, then what is left of that right thereafter.

You have seen the collective strength and wisdom which the native people have brought to bear at the community hearings in explaining to you what has happened to them and their land since the white man came into their country, where they are now and the path along which they would seek to go, if granted what they assert is their basic right, to chart that path themselves. They have said that that path will look very different from the one which non-natives predict for them on the basis of the last twenty years since that period is, in their eyes, a colonial experience. The implications of the land claims before the pipeline is that they will have the right to choose that path. As Professor Saul stated, based on the African Movements for self-determination, the recognition of that right is likely to reinforce the collective energy of the native people so that their cultural integrity is guaranteed survival and their distinctive history, way of life, language and values enrich all Canadians.

What are the implications of not recognizing that right and proceeding with the pipeline before settlement. We feel that the result would be a severe undermining of this collective energy and unity. This is not to say that the effect would be the same on all parts of the native community. To some, particularly the young articulate leaders, such a result could do nothing except stiffen their resolve to resist. To the extent that they found widespread support in the communities the clear implication of





this is that Canada's North would join other parts of the world as an arena for a war of liberation. As we have come to understand the Dene and the Inuit from the community hearings, while they are essentially a people of quiet dignity, they can be pushed to the point where they have no alternative because they face, as a number of them have told you, cultural genocide.

Now that is one scenario and hopefully one that belongs better in a novel than in these submissions. Nevertheless, some of the very strong words and feelings which have been expressed at the community hearings require us to address ourselves seriously to this possibility.

A more likely effect in our view is that if the pipeline development comes before a land claims settlement, those communities and those people who are already struggling with the negative effects of white intrusion and development that has so far come into the North, will be further demoralized so as to maximize the negative effects inherent in large scale development. To the extent that the process of marginalization, the sense of being made irrelevant in one's own land, is a primary causal factor in social pathology, the native people are likely to suffer these effects in greater measure. As Hugh Brody stated "when people or even whole societies cannot do the things they regard as most important and most useful then human pathologies spring up and retreatism, apathy, and futile violence become endemic". Large scale development in the best of worlds seems to cause increased crime, violence and alcoholism, how much more so when it comes to a population denied the right to direct its own future.

There are historical analogies here for both of these scenarios. Douglas Sanders, in his evidence, concurred in the view of Mr. Justice Morrow that the situation in the Northwest Territories at the present time was closely parallel to the situation on the Prairies at the time of the Riel rebellions. As Mr. Sanders pointed out, in both situations native people faced the loss of numerical superiority and the political power that could mean; in both situations basic provisions for native land and political rights had not yet been made; in both situations non-native land use developments were imminent; in both situations they suffered from a colonial style relationship to the Government. Professor Page in his evidence described how one of the major purposes of the 1870 rebellion was to secure land and political rights for the Metis. This is reflected in the List of Rights drawn up by the Provincial Government, which can be properly regarded as the



Land Claims proposal of the Metis of Manitoba. As Sanders states, it is tragic that it took a rebellion to secure its settlement. A major cause of the 1885 rebellion was the failure of the Government to recognize the land rights of the Saskatchewan Metis and here, as Professor Page pointed out, the failure of the rebellion and the demoralizing effect the outcome of that had on the Metis People left them all the more open to the negative social and cultural impacts of the coming of the CPR and the opening up of the west to white immigrants.

Professor Russell, in his evidence, suggested that the prejudice involved in postponing settlement until after construction of the pipeline was that in the absence of the settlement, the negative effects of the pipeline would be so great that there would no longer be a people with whom to settle. While we are not so pessimistic about the ability of the native people of the North to survive the pipeline, given the thousands of years they have lived on this land under circumstances which make national heroes of the few white men who have managed to live like them, we are of the view that prior construction of the pipeline will constitute a clear prejudice to the land claims settlement. It will render much more difficult the achievement of almost all of the constituent parts of the claim and will beyond a reasonable doubt, compromise the basis of the claim-the right to self-determination. The climate which prior construction would produce in the Northwest Territories would bode ill for the extension of the spirit of Confederation to the original people of the North.

We submit, therefore, that the case for prejudice is made out if the pipeline precedes settlement of the native land claims and this is so notwithstanding any other terms and conditions which we have recommended. We are not persuaded that any of those terms avoid the prejudice although they may, and we have already indicated how, ameliorate it. That, however, is not the end of the argument. We turn now to the fourth area of our submissions.

#### 4. THE IMPLICATIONS OF CONCURRENT NEGOTIATION OF SETTLEMENT OF THE LAND CLAIMS WITH CONSTRUCTION OF THE PIPELINE.

If there is clear prejudice in prior construction, cannot that prejudice be avoided by parallel construction and settlement. Particularly if one of the major implications of prior construction is to undermine the hopes and aspirations of the





native people, does the alternative of parallelism solve the problem. Rather than repeating our analysis of the constituent parts of the claims in light of this concept of parallelism, we think it would be more useful to analyse the situation in James Bay, where that concept has been accepted, in order to understand whether it is a model for the kind of process which could be engaged in the Northwest Territories and the Yukon. We will also look at the Alaska Native Claims Settlement Act for the lessons of experience it offers for the Canadian North.

The Native Organizations in their evidence, with reference specifically to the James Bay settlement, expressed the view that negotiating a settlement while a major development project is proceeding is like negotiating with a gun to your head and inherently prejudices the settlement. The Crees of James Bay, however, in their evidence before this Inquiry at the southern hearings in Montreal denied that this was the case and stated that the James Bay settlement was freely negotiated and agreed; that it has had the result of putting the Cree people into an independent position not only to face the Government of Quebec and the Government of Canada but also to face the society in which they have to participate not as spectators, but as participants and decision-makers of the future, a future decided by the Cree themselves; and that the Agreement would preserve their culture and society. Now if these be the results of the Agreement they are not that different from those which we understand to be the objectives of the Dene and the Inuit in their land claims.

It is possible to break down the James Bay Agreement into a number of constituent parts which bear close resemblance to the parts we have identified for the Dene and Inuit claims. Under the James Bay Agreement, the Cree and Inuit of the James Bay region surrender their aboriginal rights in the Territory in return for a land regime which gives them specific interests in three categories of land. Category I Lands, are lands allocated to the native peoples for their exclusive use and consist of the lands in and around the communities where the native people normally reside. These lands are to be administered by the native people and while there are legal differences, these lands roughly correspond to Indian reserve lands. Subject to existing rights and to use for public purposes, for example, roads and easements for utilities, no development on these lands can take place without consent of the native people. This is, however, qualified to the extent that since the native people do not own the sub-surface rights in these lands, they are required to





permit sub-surface owners to use the surface in the exercise of their rights and indeed they must permit such surface use even by owners of mining rights adjacent to Category I Lands. These Category I Lands comprise approximately 3,250 square miles allocated to the use of the Inuit and 2,158 square miles to the use of the Crees. The total area covered by the Agreement is 410,000 square miles or roughly equivalent to the area covered by Treaties 8 and 11. From this, it can be seen that the Category I Lands comprise, in the words of John Ciaccia, who negotiated the settlement for the Government of Quebec, "a tiny proportion of the whole territory". Compared to the Nunavut proposal, which seeks rights even greater than those accorded to the Crees and Inuit in Category I Lands in respect of 250,000 square miles, this part of the James Bay land regime is not overly generous. A fortiori, it compares unfavorably to the claims of the Dene to the whole of the 450,000 square miles of the Mackenzie Valley.

Category II Lands are lands over which the native people have exclusive hunting, fishing and trapping rights, but no special right of occupancy. The Government of Quebec may earmark these lands for development purposes at any time, as long as the land used for development is replaced or monetary compensation paid. Notably, mining exploration, seismic and technical surveys are not classified as development so that these may be carried out freely on Category II Lands without compensation even though they interfere with traditional activities. Twenty-five thousand square miles are designated as Category II Lands for the benefit of the James Bay Crees and some 35,000 square miles for the benefit of the Inuit.

Category III Lands are public lands of the Province of Quebec over which native people have the right to hunt, fish and trap and in respect to which certain species of animals and birds are reserved for their exclusive use. Development is possible on these lands without compensation to native people and generally speaking anyone in Quebec will have access to and the use of Category III Lands in accordance with the ordinary laws and regulations of Quebec concerning such public lands.

The agreement also provided for a large monetary settlement amounting to \$225,000,000 to be paid over a 20-year period. However, there are no provisions for royalties, the settlement being in lieu of royalties and there is no possibility, except on Category I Lands, for the native people to control development through such vehicles as an agreement for consent set out in the Nunavut proposal.



The control of land use and economic development comes from those provisions of the Agreement which set up the Hunting, Trapping and Fishing Regime and the Environmental Regime. The Hunting, Trapping and Fishing Regime gives exclusive rights to harvest certain species of animals, birds and fish to the native people and guarantees present levels of harvesting. It is designed to protect the subsistence economy of the Cree and the Inuit. The Environmental Regime is designed to ensure that any development project in the Territory, with certain important exceptions, must be preceded by environmental impact statements covering specified matters. Both these Regimes are administered by committees on which the native people, on one side, and the provincial and federal governments on the other, have equal representation. These committees are, however, for the most part advisory, with the Government of Quebec having the ultimate power of decision.

The traditional renewable resource based economy is protected further by a guaranteed income program for subsistence hunters and trappers and a special corporation is established under the Agreement to undertake remedial works to alleviate negative impacts of the La Grande complex and to undertake research into renewable resource development.

The Agreement also makes provisions for the setting up of institutions of both regional and local government for the Crees and Inuit and for the creation of a Cree and Inuit School Board. The regional government in the Agreement is given wide powers over local administration, transport and communications, justice, health and social services, education, economic development and environment, resources and land use management, all areas over which the Inuit and the Dene of the Northwest Territories are also seeking control. However, in the important areas of economic development and environment resources and land use management the extent of that jurisdiction is limited to the nominating of representatives to the committees established under the Environmental Regime and the Hunting and Trapping Regime, committees which in turn are merely advisory.

The Cree and Inuit School Boards established under the Agreement have all the powers of school boards established under the Quebec Education Act, but in addition may select and develop courses and teaching materials designed to preserve and transmit the language and culture of the native people and may arrange with the Quebec Department of Education for the hiring of native persons as teachers, notwithstanding that they might not qualify as teachers under normal Provincial standards. The Agreement also provides





that the teaching language shall be the native language although the teaching of French is also agreed to be an objective of the Cree and Inuit school boards. The language of communication of the regional government shall be the same as applicable elsewhere in Quebec but in addition Cree and Inuktitut are authorized languages.

We feel that it is safe to say that apart from the areas of environment, economic development and land use, the powers granted the native regional governments correspond with the powers granted to comparable units within Quebec and are modelled on a municipal structure. This is reflected in the Agreement where detailed provisions are set out covering the qualification for office, conduct of meetings and elections, voting requirements and procedural matters of that kind. The Agreement does however seek to take that basic municipal model and adapt it by supplementing additional powers to reflect matters particularly important to the Cree and Inuit people.

It is important to be aware however that in all cases where powers are granted to local or regional governments and boards, these agencies are answerable to the appropriate ministry of the Quebec Government whether it be Municipal Affairs or Education or Health. As Mr. Ciaccia stated in his address to the Parliamentary Committee convened to examine the Agreement, what the Government of Quebec was doing here was "taking the opportunity to extend its administration, its laws, its services, its governmental structures throughout the entirety of Quebec; in short, to affirm the integrity of our Territory".

This Agreement was made as construction of the James Bay Hydro project went ahead. Why not a similar process in the Northwest Territories and the Yukon. It seems to us there are several points which have to be made. First, the Agreement not only assumes but guarantees that the James Bay Hydro Development will proceed unimpeded by legal challenge, albeit subject to some modifications in the placement of some of the installations. The possibility of a future without the development however is precluded. Indeed in the Agreement the Cree and Inuit undertake not to oppose or prevent certain future hydroelectric development projects on the basis of their sociological factors or impacts. The assumption of development going ahead was clear on both sides in James Bay. Mr. Ciaccia in his address to Parliament made this quite clear when he stated "there is no question of stopping development". Chief Billy Diamond for the Crees also in his evidence in Montreal told you that "my people accepted the





reality of development of the James Bay Project". Given the fact that the project was going ahead this is understandable. However, the Dene and Inuit may want a settlement which looks to a future without a pipeline. To that extent a settlement which proceeds concurrently with the project clearly must compromise the settlement.

The assumption in land claims negotiations that a particular development project will go ahead seems to have other implications, judging from the James Bay experience. The clear implication of the James Bay project was that the area was to be opened up and made legally available for future development. As we have seen, the agreement itself precludes the Crees from challenging certain projected major developments. The fact that the area was to be opened up for future development perhaps explains the very limited land rights granted the Cree and Inuit, particularly the very limited areas in which their consent to development is required. The decision to open up an area through a major project seems then to limit the likelihood of the government recognizing as opposed to extinguishing aboriginal rights and maximizes the likelihood of the government retaining ultimate control over development decisions, particularly when the project is for the benefit of people outside the region, as it was for the James Bay Project and as it is for the proposed Mackenzie Valley Pipeline. John Ciaccia perhaps properly described the James Bay Agreement as ensuring "meaningful participation" in development decisions. It quite clearly does not permit control by the native people over what happens in their traditional homeland, except for the small area of Category I Lands immediately around their communities. The local and regional governments and the Hunting and Trapping and Environmental Regimes all operate subject to the superintendency of the Government of Quebec. The Agreement therefore does not allow the kind of self-determination the Inuit and Dene are seeking, because the Quebec Government, having committed itself to the major project which would shape the future of the James Bay territory, required a continuing governmental presence to carry on that development cycle. All that it can permit is "meaningful participation" in the decision-making structure.

From this we conclude that the main prejudice flowing from negotiating a settlement around a major project, which is already a fait accompli, where the project is likely to start the process of opening up an area for resource development, is that it inherently reduces the likelihood of native people achieving



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substantial land and political rights to shape the future development of the region.

The second point we would make is that while the James Bay Agreement recognizes in theory that there is required a period of implementation for the Agreement (it is referred to as the "transitional period") a process of parallel claims settlement and construction does not in fact permit any period of time for implementation of some of the important provisions in the Agreement. Let us take two examples.

The James Bay Agreement goes some distance in extending the powers of the native school boards on the very clear principle that the native languages are important and vital to their culture and must be supported through the schools. Now if Dr. Krauss is correct in suggesting that a program for linguistic survival, including the establishment of bi-cultural and bilingual schools, takes anywhere from five to fifteen years to become firmly established, to start a project which has the potential for serious erosion of the languages and cultures, before the implementation of that education and language program, surely makes a hollow mockery of the provisions in the Agreement. Dr. Krauss in fact said as much.

The second example is the provision in the James Bay Agreement for the establishment of a corporate body to conduct a renewable resource program to ensure that the people have a real choice as to what lifestyle they follow, one of the objectives of the settlement identified by Chief Billy Diamond. Now the evidence before this Inquiry is that such a program not only requires research and inventory of the resource base but in addition resource enhancement. Such a program, again, is not self executing; it takes time, particularly given the present level of research and initiative devoted to this sector. Once again, starting a major project in the non-renewable resource sector before the other sector has been brought up to a co-equal status. The fact is that many of the objectives sought in the Northwest Territories and Yukon through the lands claims will take a substantial time period to implement. Not only the education and language program and the renewable resource regional government from indigenous models will be a far more arduous and time consuming process than the approach taken in the James Bay Agreement of simply extending the municipal model into the hinterland. Given that these programs are designed and will ensure the survival of the native people and permit them to control and cope with anticipated development, this time must be





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permitted. The consequences of not giving this time in James Bay will not be known for some time to come. We of course cannot wait to find out. There are, however, some historical lessons to draw on. Mr. Sanders, in his analysis of the events on the prairies in 1869 leading to the first Riel Rebellion and the Manitoba Act, pointed out that even though the Act recognized the Metis land and political rights, delays in the implementation and the rapid influx of white settlers undercut those rights.

It is relevant, in our submission, to consider at this point the experience of the Alaska Native Claims Settlement Act since in Alaska the politics of oil and native claims combined to permit a land claims settlement before the pipeline development proceeded. The Native Claims Settlement Act was passed at the end of 1971 and the permit for the Alyeska project was granted in 1973 with construction beginning in 1974. The Alaska Settlement, while in itself a major break with previous native settlements in the United States, differs qualitatively from the kind of settlement the native people in Canada's North are seeking. Under the terms of the Settlement, the native people in consideration of the extinguishment of their aboriginal claims to some 375 million acres are granted 40 million acres of land and close to one billion dollars. The Settlement set up an elaborate system of regional and village corporations to hold title to the lands and receive the monetary benefits. It also set up a complicated system of land selection, reflecting the fact that the State of Alaska was also interested in land selection under the terms of the legislation admitting it to Statehood. The Settlement does not give any special recognition to the native subsistence economy in the form of hunting, fishing or trapping rights nor does it establish any native political structures. In fact the Act specifically states in its Declaration of Policy that no permanent racially defined institutions, rights or obligations should be established by the Act. The clear purpose of the Settlement therefore is to integrate natives into the dominant society and the Act can be properly regarded as the most recent example in the United States of the termination policy. This policy is the same one which was put forward by the Canadian Federal Government in its 1969 White Paper and which met with universal rejection by the native people of Canada. In its philosophical underpinnings, therefore, the Alaskan Native Land Claims Settlement Act is very different from those of the proposed Inuit and Dene settlements which seek the preservation, not assimilation, of native culture and society.



Evidence before this Inquiry concerning the Alaska Settlement has suggested that the fact that it was negotiated as the necessary precursor to large scale non-renewable resource development predetermined the shape of the Settlement. Not only was the pipeline corridor, with some minor exceptions, excluded from native selection of lands, but the structure of the settlement requires heavy native participation in the non-traditional economy to maintain the benefits received under the Settlement. In particular, the provisions that native lands will be tax free for only 20 years and shares in the native corporations will be freely transferable to non-natives after that period, means that the regional corporations must generate income from their lands and build up enough investment capital to prevent the need to sell off their lands after the 20 year period. Many of the corporations are trying to build up that financial base by participating in the dominant economic activity in Alaska, which at this time is the non-renewable resource sector, either through straight lease arrangements with oil and mining companies or joint ventures. Emil Notti, who was President of the Alaska Federation of Natives at the time of the negotiation of the settlement, in describing the dilemma the native corporations faced in maintaining their land base, stated that the settlement could be viewed as an effort to transform the people from hunters and gatherers into entrepreneurs and capitalists in as short a time as possible. This is clearly very different from the expressed wishes of the native people of Canada's North. In fact, it is probably different from the wishes of many native people in bush Alaska and it illustrates again the lesson we derived from James Bay that a land claims settlement which is negotiated on the necessary assumption of large scale non-renewable resource development taking place, is likely to be prejudiced in that the goal of encouraging alternative avenues of economic development is undermined.

Ms. Ann Forrest, in her analysis of the Alaska Settlement, while pointing to the possibility of the native corporations using their income to generate community development projects, concluded that the corporate structures built into the Settlement, the need to generate income and capital to maintain land assets and the boom economy generated by the pipeline development have all combined to push the regional corporations into competitive large scale joint ventures in the non-renewable sector. As she put it "the Alaskan Settlement does not permit the native people to expand their own ideas about economic alternatives and leaves them as much tied in with the wage economy and corporate notions of economic development as they

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial data. This includes not only sales and purchases but also expenses and income. The second part of the document provides a detailed breakdown of the company's financial performance over the past year. It includes a comparison of actual results with budgeted figures, highlighting areas of strength and areas needing improvement. The third part of the document outlines the company's financial goals for the upcoming year, including targets for revenue, profit, and cash flow. It also discusses the strategies and initiatives that will be implemented to achieve these goals. The final part of the document provides a summary of the key findings and recommendations from the financial review. It concludes by reiterating the importance of transparency and accountability in financial reporting.



ever were before, if not more so". As she said, this is not what the people of the Mackenzie Valley and the Northern Yukon have told you is their vision of their future.

In the context of our present analysis there are other valuable lessons to be learned from the implementation of the Alaska Settlement. The Settlement Act required the incorporation of 12 regional and 200 village corporations and established a 3-year time frame for the selection of native lands. Emil Notti described in his evidence how the combined effects of the massive introduction of a corporate structure, which was quite foreign to the indigenous patterns of organization of native people in the villages, and the need to select lands in a relatively short period of time upon which their future subsistence activities would depend, put the native villages under tremendous pressure. He described how in fact many of the village corporations were not viable corporate entities and had been unable to maintain even the reporting and accounting functions required by law because of the lack of trained people. The clear lesson to be learned from this is that if three years is barely sufficient time to implement the basic provisions of a land claims settlement of the Alaskan model, then given the much more comprehensive nature of the claims being put forward in the Northwest Territories and the Yukon and particularly the avowed object of maintaining an alternative economic base to non-renewable resource development, a much longer period is required in Canada's North after settlement before large scale non-renewable resource development is permitted, if the Settlement is not to be undermined.

What this means is, not only are we persuaded from James Bay that concurrent development and settlement does not avoid the prejudice to a land claim settlement, but we are of the view, a view reinforced by the Alaskan experience, that even a prior settlement and subsequent development at a very short distance thereafter is inherently prejudicial to the settlement. In our submission the clear implication of our analysts, given the principles underlying the land claims, is that not only must the claims be settled first but that a substantial period of time, in our estimate ten to fifteen years, must be allowed before major development, to permit the implementation of the settlement, for the setting up of institutions, structures and programs which will guarantee the native people of the North a secure political, social and economic base upon which to face the future.





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That future may or may not include a Mackenzie Valley Pipeline but if it does, the native people of the North and other Canadians would know, at that point, the cost of sustaining one way of life would not involve the death of another. negates rather than permits real choice.



## "ACTION" COMMUNITIES

1. The larger, ethnically mixed "Action" communities of the Mackenzie Valley will likely experience the effects of the pipeline quite differently from the smaller communities in which native people comprise the bulk of the population.
2. In the section on "Native Society" it was suggested that problems of the smaller native communities are more likely to derive from factors such as impacts on the communities' resource bases and the employment of local people on the pipeline. In these smaller communities, employment on the pipeline, while having some positive effects, could withdraw much needed labour from the community, could disrupt community social patterns, and could aggravate problems such as alcohol misuse.
3. In the case of the action communities such factors would be a lesser problem than the pressures of overly rapid growth. Population growth could occur at so high a rate that the normal provision of essential municipal services and administration could fall short of levels needed to maintain a minimally tolerable quality of life. Given the simultaneous or closely sequential occurrence of pipeline construction, oil and gas field development, and other projects of considerable size, the population of Inuvik or Tuktoyaktuk could double or triple during a decade. Moreover, such rapid growth would probably be marked by surges and large variations in the year to year rate. One of its characteristics would be a high turnover of community residents -- people would always be moving in and out. The experience of living in a community undergoing such growth would be that of continuous adjustment to changing circumstances. Residents would undoubtedly suffer many daily annoyances. However, these would be rendered more tolerable because daily life for most people would likely proceed at a relatively high material standard.
4. However, other people living in these communities, particularly the lower income groups and native people, could suffer a serious decline in the quality of their lives. Social pathologies and indigence which are already factors in communities such as Fort Simpson and Inuvik are likely to become greatly aggravated under rapid, pipeline induced growth. Native people could become even further alienated from their land based traditions and more deeply submerged in urban environments which allow them little place or sense of purpose. Problems such as alcoholism, violence and family disintegration would undoubtedly increase with the advent of the pipeline, and programs to cope with them will have to be initiated or extended.





5. In addition to Inuvik and Tuktoyaktuk, the communities that are likely to be particularly affected by rapid growth are Norman Wells, Fort Simpson and Hay River. Yellowknife, which would play a prominent role in public administration functions related to the pipeline, could also experience rapid growth. These are among the communities that have already borne the major burden of rising northern activity levels, and that have already undergone substantial social and economic change during the past decade.

6. What has already happened to these communities, and what will happen in future, is of considerable interest to smaller nearby settlements that are in some respects their satellites. Aklavik can be regarded as a satellite to Inuvik and Fort Norman bears a somewhat similar relationship to Norman Wells. Growth of the larger communities could have a two-fold effect on these smaller communities. First, there might be some direct "spill-overs" from the larger communities. For example, if Inuvik became too overcrowded, Aklavik, which is only some 20 minutes away by air, would be the logical place that people would look for accommodation. Secondly, and probably more importantly, the growth of the larger action communities would draw essential labour out of the smaller communities and could raise a variety of problems for the people who stayed behind.

7. Many of the problems that the action communities are likely to experience as a consequence of the pipeline and related developments would result from very rapid growth in the face of limited physical and financial capabilities to deal with this growth. At present, municipal services are barely adequate to meet the requirements of these communities. Most communities in the pipeline region lack serviced residential land, and adequate water and sewage facilities. Housing for government or company employees in Inuvik, Fort McPherson and Norman Wells is served by utilidors. Many, but by no means all, of the residents of these centres, plus Fort Simpson, Fort Smith, Hay River and Yellowknife, are provided with a piped, chlorinated water supply. People served by utilidors have piped sewage systems, as does Yellowknife. All other communities, and practically all native housing, must rely on trucked water delivery and on sewage disposal by means of honey-buckets, cess-pits or pit-privies.

8. All municipal services depend heavily on funding from more senior levels of Government. The capability of each community to fund its own services depends on its place in the municipal hierarchy, which in turn determines its local fund raising authority. The lowest level of the hierarchy, the settlement, has



no power to raise its own revenues, and has only limited spending authority. Hamlets have a higher spending authority than settlements, but may not collect their own taxes directly. Villages, towns and cities have greater authority over their expenditures, as well as the authority to raise their own tax revenues. Their ability to collect taxes is of course constrained by the size of the tax base. Norman Wells is a settlement, Tuktoyaktuk is a hamlet, Fort Simpson is a village, while Hay River and Inuvik are towns. Yellowknife and Whitehorse are currently the only cities of the northern territories.

9. Their limited or non-existent taxing powers make northern communities dependent on federal and territorial fiscal processes. However, these processes tend to be responsive to national and regional rather than local priorities. This means that if there are general national or territorial budget cutbacks, planned projects in the communities can suffer delay. Furthermore, the communities have virtually no access to the municipal bond market and they cannot therefore borrow to finance their growth.

10. In some of the action communities, notably Inuvik, Fort Simpson and Tuktoyaktuk, growth pressures have already rendered limited housing stocks inadequate. Overcrowding is a problem throughout the Greater Pipeline Impact Region in which there are only some 5,000 housing units for a population of more than 20,000, resulting in an average density of about 4.0 persons per unit. Housing density varies from community to community, ranging from 2.8 persons per unit in Norman Wells to 6.8 persons per unit in Fort Simpson. Less than half of the regional housing could be classified as good; about 20% could be classed as poor. Estimated housing deficiencies ranged from some 700 to 1,700 units, depending on assumptions about desirable density. Recent government construction programs have concentrated on replacement only. Gemini North (1975, Vol. 2, p. 595) has estimated that by 1983, there will be a need for between 3,500 and 4,600 additional units. Using Stanley Associates' (1975, section 3.0) higher population projections for impact communities, requirements by 1983 could be even greater.

11. One problem is that there is only a very small private market for housing in the Greater Pipeline Impact Region. For the most part, by means of various programs, the federal and territorial governments are the providers of housing. They are the regulators not only of housing supply but also of housing demand, because they hire the people who occupy subsidized government





accomodation and determine eligibility for native housing. Additions to housing stock depend on nationally and regionally determined government programs and fiscal processes which may be relatively insensitive to local needs and priorities. Even if some considerable sensitivity existed, funds for the provision of housing are usually far from adequate.

12. During past decades, the rate of population growth in the action communities has been rapid. The exception is Norman Wells which is a single enterprise company town whose population is governed by the labour force requirements of the small Imperial Oil refinery. Inuvik more than doubled its population between 1961 and 1971. In the same ten-year period, Tuktoyaktuk increased its population by 48%; Fort Simpson by 33% and Hay River by 79%. All of these communities grew much more rapidly than other communities in the Mackenzie Valley, with the exception of Yellowknife.

13. This rapid growth has already led to substantial changes in the character of the population of these communities, and in local activity patterns. Some two decades ago, Hay River was a small, mainly Indian community. Now it is a major northern transportation centre. Inuvik was built as a government administrative centre and as the place to which the residents of Aklavik, which was reportedly sinking into the mud of the Mackenzie Delta, were to be relocated. Aklavik still exists, while Inuvik has increasingly become a staging point for oil and gas exploration, and will likely become the principal operating base for many private sector activities of the western Arctic in the future. Just a decade ago Fort Simpson was a quiet, basically rural community. Some five years ago it was the site of intensive construction activity as the Mackenzie Highway passed through it. For practical purposes it is the present terminus of the Mackenzie Highway, and considerable economic activity is associated with this. Tuktoyaktuk, on the Arctic coast, was a relatively isolated Inuit community and a transportation transshipment point in past decades. It is now increasingly becoming a supply staging centre for oil and gas exploration in the Beaufort Sea.

14. Native people are a major component of the population of each of the action communities except Norman Wells. Many of these people still have some contact with the land and perhaps more importantly with smaller, adjacent, predominantly native communities which rely on land based activities to a large extent. In other parts of this submission, proposals have been





put forward concerning the administration of services such as education and health to native people. The critical nature of native control over these services, preferably as part of a land claims settlement was emphasized. What has been said elsewhere, mainly in the context of native people living in smaller communities, is equally important in the case of the larger action communities. Indeed, it is likely to be even more important because of the much stronger challenge which the expanding urban environment poses for these people.

15. The non-native population of the action communities consists of a mixture of government employees, people in private business, and people who represent larger business interests from the South. While many of these people are relatively recent arrivals in the North, average tenure can vary considerably from one community to another. Many non-native people seem now to have made a long term and even permanent commitment to residency in the Greater Pipeline Impact Region.

16. As externally determined development accelerates, the proportion of the population identified with large firms not domiciled in the territories, and with government agencies responding to the activities of such firms, will likely increase within the overall population. It is also likely that, as the pace of economic activity increases, the number of short term or transient residents of the action communities will grow. In some of the communities, people who live in the North for a short period of time could become a dominant part of the population and could wield significant political power vis-a-vis longer term residents.

17. During the next decade, transient or temporary residents will arrive in the region for a great variety of purposes including pipeline construction, oil and gas development and transportation. There is no easy means of predicting how many people will be associated with a particular activity at a given time, but it is likely that a large part of the population will be associated throughout with large scale hydrocarbon resource development. The petroleum industry will therefore have a strong obligation to make the action communities tolerable places in which to live.

18. The transient character of much of their future populations could raise many problems for the action communities. On the physical side, there will likely be a scarcity of accommodation at a reasonable cost and of community services, and it will be



important to develop a strategy to deal with problems arising out of this. The dominant future pattern affecting the action communities could be one of a rapid but discontinuous growth of activity associated with the oil and gas industry. Once the initial gas pipeline is completed, there would likely be a lull until the next major project was underway. Activities such as oil and gas field development and the construction of on-shore facilities plus Beaufort Sea oil and gas could provide something of a stable base to underpin the overall level of activity. It could provide a lower limit below which regional employment would not easily fall. Yet for the most part, the employment pattern resulting from oil and gas activity would likely be of a cyclical character, with some fairly high peaks. Planning to meet accommodation and other local infrastructure needs must take into account the probability of large, short term, local variations in population and employment..

19. Rising and fluctuating levels of activity could place a severe strain on transportation to and from the action communities. As populations in these communities increase, more goods will be required from the South, additional fuel stocks will be needed, and a rapid growth of passenger transportation demand will occur, particularly with a highly transient population. At the same time, much of the transportation capacity of the region will be required for pipeline and hydrocarbon related developments. There may therefore be a problem of ensuring a sufficient capacity for community resupply. Dealing with this will require the establishment of priorities between pipeline and community needs. Additions to overall capacity will have to be made to ensure maintenance of reasonable service and rate levels..

20. A large transient population would also raise many problems of a social nature, some of which could make life for more permanent residents difficult if not at times intolerable. This has been the experience in such Alaskan communities as Fairbanks and Valdez, which have both grown rapidly in response to pipeline in-migration. There will be a need for several kinds of facilities that are now virtually non-existent in the North, including impact information centres and detoxification and crisis centres..

21. To handle their problems adequately, action communities will require both access to greatly increased revenues and a larger measure of authority in the disposition of such revenues. They will need an increased tax base, access to municipal money





markets and a local planning capability. Careful consideration should be given to the restructuring of municipal governments to provide for a greater input by native people. Relations between levels of government should also be re-examined. Many of the "quasi-municipal" functions currently being conducted by the government of the Northwest Territories should devolve downward, giving communities much greater say in the solution of their own problems.

22. One way in which the action communities could benefit significantly from the proposed pipeline relates to their energy requirements. At present, the basic source of energy for general community use in the Mackenzie Valley is fuel oil from Norman Wells or the South. It is distributed principally by barge along the river, or alternatively by rail and road in the case of Yellowknife, Hay River and Fort Simpson. It is also supplemented by propane (LPG) or hydro electricity in the case of Yellowknife and Hay River. The basic problem is that long distances, the complexity of seasonal transport, long winter storage and small markets result in a much more expensive energy situation for all of the communities of the Greater Pipeline Impact Region than in southern Canada. Furthermore there is every prospect that the situation will get worse (i.e., the cost will become relatively higher) in the future.

23. It is recommended that the pipeline should be used in some way to at least "equalize" energy costs for communities in the Greater Pipeline Impact Region with those of similar size in southern Canada. This will necessarily entail some form of subsidy which could be levied against the gas field and pipeline operators. However, as the needs of each community are different, it is probable that they can best be served through a flexible program. This could range from the provision of gas at equivalent southern prices at community gates (generally applicable to the larger action settlements), to subsidizing the existing form of energy to their southern gas equivalent (generally applicable to smaller native communities unless they are immediately alongside the pipeline).

24. There follows a series of recommendations and comments on a wide variety of topics from alcohol abuse and recreation to impact funding and fiscal needs. Although in many respects, they are relevant to virtually all communities in the Greater Pipeline Impact Region (and in this regard, some of the topics are also discussed in the section on Native Society), most are particularly important in the case of action communities. It



will be noted in reading the recommendations that they are not all equally specific to the pipeline - - many relate more to basic ongoing problems which are endemic in the region. In almost all cases, it is considered that the stresses caused by pipeline construction and gas field development will exacerbate such problems. However, it is not intended that the Pipeline Company should be entirely responsible for their resolution. As stated in the section entitled "Basic Issues" the philosophy behind the recommendations is that the Company should be responsible for any "extra-normal" impacts and bear attendant costs whether those arise directly out of the pipeline or out of a related activity. In presenting individual recommendations, an attempt has been made in this part of the submission to differentiate those which are considered the direct responsibility of the Company from those which are the more general responsibility of government.



SPECIFIC RECOMMENDATIONS AND COMMENTS

Community Energy Supply

The existence of a gas pipeline in the Mackenzie Valley should be used as a means of providing an assured energy supply to those communities where it is practical, while at the same time serving to reduce community energy costs throughout the region to a level of equality with communities in the South.

1. It is recommended that, as a condition attached to a Right of Way Agreement, the Company agree to provide gas for general use to all communities so desiring it at the nearest practical point on the pipeline and at a price not greater than the well-head price plus pipeline transport to that point.
2. It is recommended that in those cases where the Pipeline Company uses any land close to a community (i.e., right-of-way, temporary and permanent access roads, borrow sites, wharf sites, stockpile sites, camp sites), it must, if formally asked, construct a lateral from the trunk line to that community at the Company's expense.
3. It is recommended that in the case of all other communities in the area, the Company must, if asked, provide valves and fittings at appropriate locations along the trunk line.
4. It is recommended that a formal procedure be established at the design review stage to measure the energy cost differential between communities in the area and typical southern communities and that a royalty or tax be assessed on the Company equal to some weighted average of that difference - - the rate of royalty or tax to be adjusted annually.
5. It is recommended that an energy development authority for the Greater Pipeline Impact Region be set up as an independent agency or an agency of the N.C.P.C. to administer the energy equality royalty/tax fund and to assist communities in developing the most efficient utilization of energy, be it the development of laterals from the gas pipeline, the improvement of existing sources or new forms of energy.





TRANSCRIPT REFERENCES

CAGPL	Trusty, Vol. 158
Foothills	Blair, Vol. 58 Environmental Panel, Vol. 99, 100
NWT/AM	Reesor, Vol. 165

References in community hearings to feasibility of community supply laterals, policies, costs.



## Impact Information

Major problems with respect to controlling and modifying the effects of the pipeline, and providing emergency services and funding, could arise from the lack of sound information on the local effects of the pipeline project and other projects that are proceeding concurrently. Such information will be vital to planning and decision making at the local, regional and federal levels.

1. It is recommended that in each of the action communities, there be established an Impact Information Centre whose organization and operation might be patterned on the Fairbanks-North Star Borough Impact Information Centre of Fairbanks, Alaska.
2. It is recommended that staffing at each centre shall consist of at least one senior officer and a research staff of three people, plus adequate secretarial and administrative personnel.
3. It is recommended that the Impact Information Centre shall concern itself not only with the action communities as such but with the effects of growth at the main communities' nearby "satellite" settlements which may be economically and socially interactive with them. However, the Centres shall not have the prime responsibility for assessing impact at these smaller communities, as other informational mechanisms will have been provided with regard to them. (See section on "Native Societies").
4. It is recommended that each Impact Information Centre shall operate in a visible public manner, disseminating information to the public, to government, to the pipeline company and any other person or group that desires it. If there is a large demand for such information then the professional and secretarial staff of each centre should be expanded as needed.
5. The kind of information that will be collected and disseminated should be a matter for the judgement of the professional staff. The information needs of each community will differ and considerable latitude must be provided for judgement on the matter. However, there should be an attempt to standardize at least some key





data among the communities and to undertake concurrent studies on certain variables. This will be useful for intercommunity comparisons and for regional planning purposes.

6. Each Impact Information Centre should concern itself with social variables and processes such as employment, income, prices, costs, shifts in local supply and demand, the changing status of particular community groups, the behavioural problems of certain groups, etc. Which of these is given attention at a particular time will depend on the staff's assessment of priorities within a particular community.
7. It is recommended that the staff of each Impact Information Centre establish an advisory group within the community, and that, in so far as it is able, it responds to the social processes at work within the community. However, at no time shall an Impact Information Centre compromise its independence by being controlled or appearing to be controlled by the community, the company, or any level of government.
8. It is recommended that funding provided to the Impact Information Centres should be adequate to hire and maintain staff of high quality. One staff member should, if possible, be recruited from within the community or at least from within the region. In the case of the recruitment of this person, knowledge of the community and an ability to interact with it should take precedence over academic and/or professional qualifications.
9. Funding should be administered via the "Authority" as described in the "Basic Issues" section of this report. The Authority should also be responsible for initial recruitment, general administration, and ongoing matters such as hiring senior staff. In staffing, a major criterion for selection and retention of personnel should be that staff exhibit a high degree of sensitivity to the community.
10. It is recommended that the costs of the Impact Information Centres should be born by the Company, all such funds being channelled to the Impact Information Centres via the Authority. Such funding should in no



way give the Company or the federal or territorial governments any control over the Impact Information Centres. Such limited control as would be exercised by a higher authority would reside with the "Authority".

TRANSCRIPT REFERENCES

MVPI                    M. Dixon, Vol. 171, 172  
                         Baring-Gold, Bennett, Vol. 192



## Impact Funding

Over and above costs that the Pipeline Company will bear directly, a number of extraordinary costs arising out of circumstances induced by both the construction and operation of the pipeline and related developments will be encountered at action communities. These will include costs arising out of the need to provide both temporary and permanent expanded municipal services, emergency accommodation, additional hospital and educational space, and facilities such as detoxification centres. If it were not for the pipeline and projects related to it, such costs would not occur and it should not be expected that they be met out of normal municipal and territorial finances.

1. It is recommended that an Impact Fund be established to provide funding for all extraordinary expenditures that action communities will incur because of the proposed pipeline and projects that are related to it. Extraordinary costs to which the fund can be applied may be regarded as costs that would not have occurred if the pipeline were not built, or the net additional costs arising out of an acceleration of capital expenditure in a community because of the pipeline.
2. It is recommended that there be no restriction on the kinds of costs that such a fund can be applied to within a community.
3. It is recommended that the capital needed for the fund and all relevant operating costs shall be provided by the Company. The fund will be administered by the "Authority" as described in the "Basic Issues" section of this report.
4. It is recommended that the fund should come into effect on the day that a Certificate of Convenience and Necessity is granted to the Company, and that the Company at that time shall place into the fund an initial amount of \$20,000,000.
5. It is recommended that details on additional funding and staffing be left in abeyance but that both applicants submit proposals to government on how such a fund might operate for consideration at the earliest possible time.





TRANSCRIPT REFERENCES

MVPI                    M. Dixon, Vol. 171, 172  
                         Baring-Gold, Bennett, Vol. 192



## Organization of Local Government

To cope with the pipeline, the local governments of the communities of the Greater Pipeline Impact Region will have to function effectively. Representations have been made to the Inquiry that native people who live in mixed native and non-native communities such as Fort Simpson and Fort Smith are not able to participate effectively in local government because many do not understand the institutions and procedures by which the business of local government is conducted. Even where they have participated, they have generally found themselves less adept at using these institutions than non-native people, who as a consequence dominate local politics.

1. It is recommended that a committee be established by the Minister of Indian Affairs and Northern Development as soon as possible consisting of a representative of each major social group: Indian, Inuit, Métis, and White. The purpose of this committee should be to study the structure of local government in the Greater Pipeline Impact Region and to submit a report on how government could be made more responsive to the needs and perceptions of various groups.
2. It is recommended that as an interim measure, the Minister not allow the implementation of any major decision taken by any local government unless he is certain that there has been adequate input by native residents of the particular community.

## TRANSCRIPT REFERENCES

COPE	Beakhust, Vol. 167 Brody, Vol. 168
CYI	Sharpe, Vol. 153
MVPI	Yates, Elkin, Vol. 123
NWT IB/MA	W. Bean, Vol. 144, 150 Richardson, Vol. 147

References in community hearings to government programs





## Local Business, Employment and Labour Force

Over the short term, the pipeline requirements for materials and services will be massive. Only a small portion of the overall pipeline material requirements can be supplied from within the Greater Pipeline Impact Region. In the area of services, it is anticipated that many territorial residents will be employed directly in construction and in service industries serving pipeline needs (e.g., water and highway transport). Furthermore, the applicants have indicated that local contractors and retailers/wholesalers would have an opportunity to participate in providing pipeline related needs. Pipeline construction and subsequent developments will require a highly mobile labour force. With the exception of some year round employment occurring in a few communities, generally only short term seasonal employment will be available from the pipeline. Local community businesses would also be subject to the same short term seasonal demands if they tied themselves too closely to meeting demands arising directly from the pipeline. With respect to community employment and labour force, emphasis should be placed on measures to ameliorate long term disruptive impacts.

1. It is recommended that businesses in all action communities be encouraged to seek pipeline related opportunities only when the resources required to do so are not essential to meeting ongoing community needs.
2. It is recommended that in situations where a community resident has elected to accept short term pipeline employment and in the course of doing so leaves a job considered to be critical to the functioning of that community, that the Company be ultimately responsible for recruiting and training a replacement at least on a temporary basis. Care will have to be exercised to ensure that any programs developed are consistent with the recommendation in the section on Employment of Northern Residents.
3. It is recommended that community residents who shift from resource harvesting as a livelihood to work on pipeline construction be offered at the conclusion of their pipeline employment, the option of a) assistance in returning to resource harvesting through provision of necessary equipment or b) assistance in obtaining continuing wage employment (e.g., upgrading of skills and relocation grants).



## Housing

Housing is already in scarce supply in the Greater Pipeline Impact Region and projects like the pipeline could have a major effect in aggravating current shortages, and in creating needs that differ considerably from present ones (for example, for transient housing). In view of this, the following is recommended:

1. A survey of current housing adequacy, and a land use and site development plan should be expeditiously prepared for each community to enable the smooth delivery of serviced land for housing and of sites for temporary housing (trailers, campers) in those communities where the demand will probably exist. This should be the responsibility of the appropriate departments of the Government of the Northwest Territories, but must be conducted with the full participation of community representatives and in the light of their expressed desires for future stability and growth. The Pipeline Company and the Federal Government should share equally the cost of assembling and developing serviced land in the action communities where requirements will be high. This would help to ensure that sufficient funds were available from normal sources for servicing needs in the lesser impact communities.
2. Representatives from each of the communities should have significant input in the preparation and approval of final design for pipeline facilities and staff housing within action communities to ensure that the long term housing and building site needs of each community are given adequate attention.
3. All structures provided by the Company for accommodation and recreation for the construction crews should be of modular design and of high quality in order that they may be reused in the communities later. The N.W.T. Housing Corporation should advise on the design of such structures for N.W.T. communities following consultation with the communities to which they might later be assigned. These designs would be approved at the design review stage.



4. Prior to pipeline construction, the federal government should provide adequate funds to meet 50% of the costs of the housing required within communities for the construction phase, plus the general housing rehabilitation requirements of the community, as defined by the N.W.T. Housing Corporation. It is considered that the remaining 50% of such costs will follow in part as a result of recommendation No: 3; that is, a proportion of the Company's share could be embodied in good quality structures turned over to the community following pipeline construction. The disposition of any remainder of the Company's share could be the subject of discussion between the Company, the NWT Housing Corporation and the Authority.
5. Funds for housing units should not be reallocated from other parts of the Northwest Territories or from "non-action" communities to meet housing needs in action communities. In the case of unforeseen impacts on housing need, an emergency relief fund should be made available by the Company via the Authority so that housing supply may be kept relatively stable. One possible way of meeting extraordinary surges in accommodation demand would be by assembling a stock of mobile housing units that could be rapidly transferred from one location to another.
6. The Company should provide accommodation for its operations and maintenance staff, which must be approved at the design review stage by the N.W.T. Housing Corporation.
7. Assistance to permanent employees should favour home ownership by providing low-interest mortgages in place of and at more attractive rates than rental allowances.
8. All permanent employees, native northerners or otherwise, should receive the same housing subsidies. These should be in line with existing public housing subsidies in the N.W.T., i.e., the resident should pay no more than 25% of income or economic rent, whichever is the lesser, for accommodation.
9. Prior to pipeline construction, 75% of permanent staff housing should be completed and rented out during the construction phase to residents of the N.W.T. This would have the effect of alleviating the immediate housing shortage. At the same time there should be no let-up in the rate at which new housing is constructed. A sudden increase







in the housing stock will only provide an immediate stop-gap to partially alleviate a chronic long term shortage.

10. Incentives should be established to encourage the development of local construction companies and prefabrication plants. Discussions should be held with the Company to encourage it to provide the initial and continuing capital for this purpose. Also, supplies and labour for the construction of Company housing should be obtained locally to the extent practical.
11. Safeguards should be enacted to ensure that the supply of materials for housing construction in the Northwest Territories is not adversely affected by the heavy demand which will be placed on northern transportation systems due to pipeline construction.
12. In-migrants, and particularly speculative transients should be discouraged from going to smaller centres because of serious housing shortages in such centres. Information centres, associated with, but housed separately from the impact information centre, should be established in the action communities to advise on the unavailability of housing in the smaller communities, and the facilities available in others. In this regard, zoning regulations should be strictly enforced to avoid indiscriminate trailer and camp settling. A main problem with such transient accommodation, particularly if it is established in a random and uncontrolled fashion, is that there is usually not enough serviced land available for it. This is a particular problem in smaller communities where it can raise serious health problems. The provision of adequately serviced mobile home and trailer camp land in the action communities is therefore of special importance.
13. In all action communities, prior to the construction of housing for permanent pipeline staff or additional housing to meet normal community requirements, a review of water and sanitation policies should be made. In many instances, it is considered that present policies are inappropriate to future needs. More appropriate methods of providing these services should be established in the N.W.T.



14. N.W.T. Government staff housing policies should be revised to avoid disparities between rents paid by government staff, including the monitoring and surveillance personnel for the pipeline project and other northern residents. Currently, there is a substantial discrimination in favour of government employees.
15. Estimates of housing need should be kept flexible and frequently reviewed in light of the difficulty of predicting the overall level of future activity in a region as unstable as the Greater Pipeline Impact Region. The demand for housing will fluctuate both during and after pipeline construction and there will be a real danger of under or over building if estimates of future needs are based on long term predictions.

TRANSCRIPT REFERENCES

CAGPL	Trusty, Vol. 161-163 Boorkman, Weinstein, Vol. 159
Foothills	Ellwood, Jensen, Vol. 165, 166
COPE	L. Clark, Vol. 182
MVPI	Dixon, Vol. 171, 172
NWT/AM	Dusel, Vol. 173
NWTHC	Lowing, Runge, Vol. 178, 179

References in community hearings re government programs, housing shortages, poor quality etc.



## Education

While the aspects of education and language which are of more specific importance to the native communities have been dealt with in "Native Society", certain practical problems will undoubtedly arise in the action communities which could affect the quality of the school system as it is at present structured, and make it difficult to effect the kinds of innovations that may be contemplated for both native and non-native students. During the construction phase, in-migrants seeking jobs on the pipeline and related employment may bring their families to live in some of the larger communities. To the extent that the number of school-age children would increase, the educational infrastructure would have to be expanded and the number of teachers would have to increase as well. In view of this, the following is recommended:

1. Using estimates of both normal growth and of pipeline population projections developed at final design stage, the increase in students which can be attributed to pipeline development can be determined. From these figures, the Department of Education can anticipate the number of classroom additions which must be constructed given sufficient lead time.
2. Funds for the construction of these facilities beyond the requirements of normal population growth, should be a responsibility of the Company. These funds would be administered by the Authority, in conjunction with the NWT Department of Education.
3. If large numbers of students are anticipated for only a short period during the peak of pipeline construction, the Company should be responsible for providing modular classrooms of high quality which could be reused in communities later.
4. Greater efforts must be made to attract and retain teachers in northern schools. This should involve orientation for prospective teachers and wages competitive with those in the South.
5. Accommodation for additional teachers required as a result of pipeline development, should be the responsibility of the Company. For further details, see section on "Housing".





6. Elected school advisory committees should be established in each of the action communities in order for the local residents to have some control over the education of their children.

TRANSCRIPT REFERENCES

CAGPL	Boorkman, Vol. 159
Foothills	Jensen, Vol. 165, 166
Private	Graves, Vol. C-5
CYI	Sharpe, Vol. 153
COPE	Button, Robinson, Vol. 176
NWT IB/MA	Asch, Vol. 148 Yazzie, Gillie, Kakfwi, Vol. 156



## Health

Even though northern health facilities and services have greatly improved over the past years, there is still ample room for further improvement. It may be difficult to achieve this during the rapid growth and change of pipeline construction. Such considerations lead to the following recommendations.

1. Greater efforts should be made to provide a more strongly integrated and better co-ordinated health care system in the North:
  - a. the responsibilities of various government departments and agencies involved in health care delivery should be more clearly defined to close gaps in the present system and to avoid duplication of services;
  - b. existing federal and territorial legislation should be reviewed and changes made as needed to provide closer meshing of the two levels of Government.
  - c. health care services should be transferred from the federal to the territorial governments, but arrangements to enable the territories to provide an adequate level of care would have to be a prior step. Consultation with the native organizations would also be needed before such a transfer was made. The transfer should be conditional on a further devolution of health care delivery. Native people might, for example, be responsible for many facets of health delivery in their communities.
2. There must in general be more consumer participation in the policy and planning of health care services, especially from native people. This could be accomplished by means of the following steps:
  - a. local and regional advisory boards with some control over budgets, personnel, policies and programs should be established. An example of a facility that could perhaps serve as a model is the Churchill Health Centre.



- b. there should be an independent audit undertaken by a committee of medical practitioners and regional residents to advise on the adequacy or deficiency of health services in the Region and to make recommendations to the territorial government for whatever changes might be required. Such audits, conducted frequently, could comprise an important aspect of monitoring the pipeline.
3. Recruitment of native people into the standard health care system should be accelerated through more extensive programs that would include substantial elements of professional as well as paraprofessional work. Also, there is substantial reliance on traditional medicine among native people, and native medical practices should be given more support and encouragement, with a satisfactory mix of traditional and modern medical practices being viewed as a desirable end. Social (or group) as well as individual aspects of medical services must be accepted and developed.
4. The federal budget for health care in the North should be expanded co-incidentally with the granting of a pipeline permit so that existing levels of service are not only maintained but improved, and continue to be improved, during the period of pipeline construction. Funding must be made available to communities at an early date to ensure that adequate facilities are in place prior to pipeline construction.
5. Efforts should be made to attract and retain medical personnel for longer periods and to reduce the high turnover which causes a lack of continuity in health services and dissatisfaction among people dependent on these services. There should be more extensive pre-employment orientation programs to prepare new medical staff more adequately for the physical and psychological conditions of the North. Also, remuneration to medical staff resident in the North must be made competitive with salaries and wages paid in the South.
6. The territorial governments should immediately begin to upgrade their collection of health care data in order to provide a sounder base for future planning even though it is recognized that such data can only offer a partial guide to possible future demand for health services because of the uncertainties posed by enormous projects such as the pipeline.





7. Programs and services dealing with the alleviation of socio-economic problems which affect health should be strengthened and expanded, particularly with respect to; counselling of adolescents, diet and nutrition, alcohol programs within communities, improved housing conditions, improved waste disposal, plus additional adult health education.
8. There is an identified requirement for expanded dental health programs including both education and treatment. To the extent that this requires more staff, one possibility is that greater use can be made of dental therapists.
9. Visits from medical specialists which supplement care within the community should be more frequent, of longer duration, and timed not to conflict with major community activities.
10. When it becomes necessary to evacuate patients to southern hospital facilities, responsibilities of the appropriate departments of the federal and territorial governments should be clearly defined regarding matters such as the transportation of patients to and from the south, and maintaining communication between the patient and relatives in the North.
11. The environmental health program related to sanitation should be upgraded, especially to accommodate the present demand for inspection and enforcement. The demands on this service will increase precipitously during pipeline construction and expanded programs should be in place well in advance.
  - a. All present positions for environmental health officers should be filled prior to pipeline construction. Additional needs should be identified and staffing action should be taken as necessary.
  - b. Existing legislation should be reviewed, and the responsibility of various government departments for this service should be clearly defined.
  - c. Human waste disposal is a problem which must be addressed immediately to ensure that conditions for good public health prevail when the pipeline induces rapid community growth.

The Pipeline Company must accept certain responsibilities for medical services and act in accordance with territorial



regulations. In this regard, the following specific recommendations are made.

12. Initial treatment of persons who become sick or injured while on the pipeline should take place in the construction camps by pipeline personnel qualified under the standards of the territorial governments.
13. The use that will be made of local hospital facilities must be carefully estimated prior to pipeline construction and measures must be taken to ensure that adequate facilities are available to meet the needs of both the pipeline and the public. If there is any conflict, public needs must be met first. It is recommended that the Pipeline Company supply transportable nursing stations for construction camps and extraordinary needs in action communities rather than have government overbuild permanent facilities.
14. The requirements of the pipeline project for professional medical staff must be estimated at an early stage so that any possible conflicts with normal territorial health staffing needs can be resolved. For example, environmental health inspection needs in the construction camps must be met either by having the Company employ its own sanitarians or by a cost-sharing agreement with the territorial governments.
15. Water and sewer facilities for construction camps should be of a size and quality to enable their re-use in communities. Environmental health inspectors familiar with community needs should be involved in the design and planning of these facilities.



TRANSCRIPT REFERENCES

CAGPL	Trusty, Vol. 162
Foothills	Kosten, Vol. 66 Jensen, Vol. 165, 166
COPE	Schaeffer, Hildes, Mayall, Cass, Vol. 185, 186 Worl, Vol. 189-A
NWT/AM	Dusel, Vol. 173
NWT IB/MA	Vol. 143, 145, 147, 148

References in community hearings, especially as related to alcohol.





## Mental Health

The most important factor in good mental health is the ability of an individual to have reasonable choice about the factors that affect his or her own life. In a situation of stress and rapid change, such as is likely to accompany pipeline construction, the time and ease people will have to make careful and rational choices or adjust comfortably to changing circumstances will be curtailed. Disturbances to people's normal lives will be unavoidable, and the only recourse would seem to be to help communities and individuals to make change less psychologically damaging. However, as there will inevitably be a need for treatment, shortfalls in mental health services and facilities, particularly in the action communities, must be addressed immediately. In light of this, it is recommended that:

1. Legislation, similar to the Alaska Community Mental Health Act of 1975, be immediately enacted to enable communities to design and implement programs for their own needs. The present system of advisory committees lacks significant input into the federally formulated community health policies. Proper legislation can provide a means for communities to request and participate in the development of services.
2. The principle of community participation should not be limited to a single area of social services; it should be reflected and developed with respect to all social services. Thus communities should be given a substantial element of control in areas such as education, corrections, health delivery, etc. Organizations such as the Interagency Committee in Yellowknife should be established in all the action communities.
3. Adequate funding must be provided to coordinate and train community mental health resource people.
4. The federal government, through the Department of National Health and Welfare, should begin to collect sound baseline data on health problems and delivery needs immediately. Planning of future services can only be done with the knowledge of what these current and evolving needs are. Social indicators such as the number of hospital admissions, of crisis line calls, and of child welfare cases, are not presently available in sufficient detail to serve as a base for planning future needs.



5. Immediately following the granting of a Certificate of Convenience and Necessity, the Pipeline Company should become actively involved in discussions with leaders in all action communities about how they may mutually be helpful to each other. This would also provide a forum in which each community could gain an appreciation of its own values and objectives. Industry's involvement in the past has often taken the limited form of alcoholism rehabilitation or recreation programs. However, these or other appropriate programs should only be started after full consultation with, and in conjunction with, communities and not as unsolicited hand-outs.
6. Prior to the start of construction, the Northern Health Service should ensure that the present positions for a psychiatrist, a psychologist and the mental health nurses in the territories are filled. Every effort should be made to recruit and retain staff in order to develop a continuity of health services through personnel familiar with the region and its problems. In this regard, the use of southern consulting psychiatrists should be limited to special services that a resident Mental Health Team cannot handle. The salaries and working conditions of northern mental health professionals must be made as attractive as possible in order to attract and retain competent people. Better practical and psychological preparation of incoming mental health workers might help to lessen turn-over.
7. Where mental health diagnosis and treatment cannot be done either in the local community or in regional centres within the North, a local resource person should accompany the patient outside, and the patient should be returned to his home community as soon as possible. Further to this, it is recommended that the community context of both mental health problems and treatment should not be overlooked, particularly in the case of native people who derive a great deal of support from their family and kin groups.
8. There should be greater use of bi-cultural teams, preferably using local or native para-professional workers who are familiar with northern people and their backgrounds. Alaska, where a bi-cultural treatment team approach is used, should be given study as a possible model. The Alaskan team comprises a professional, usually non-native, working in conjunction with a trained native person. The use of para-professionals in Greenland should also be examined.



9. Workshops to train local para-professionals and resource people within their own communities, or in regional centres should be implemented immediately. Funds for this should come from the overall mental health budget described in recommendation No. 3. There are people available for and interested in community mental health throughout the Greater Pipeline Impact Region; however they need training and coordination.
10. Preventative measures must be stressed above all else. Treatment of mental health problems is long, involved and costly, both financially and socially. Some preventative measures are the responsibility of government and partly the responsibility of the Company, such as programs to discourage excessive numbers of transients from entering communities, and placing additional strains on community residents and services. Others are fully the responsibility of the Company and its contractors, such as removing from the North southern employees who quit or whose employment is terminated, and providing southern employees with adequate orientation to northern lifestyles and cultures.

#### TRANSCRIPT REFERENCES

CAGPL	Trufty, Vol. 161 Hobart, Vol. 163
COPE	Atcheson, Abbott, Kehoe, Vol. 184
MVPI	Dixon, Vol. 172
Mental H/NWT	Forth, McCombs, Clayton, Vol. 182





## Alcohol

The abuse of alcohol appears in part to stem from situations of stress which are characteristic of rapid and disruptive social change. Alcohol abuse is a serious health problem in the Greater Pipeline Impact Region and the pipeline will make it more serious. Planning must take place now with regard to how alcohol problems will be handled. It is not enough to assume that problems of alcohol abuse will resolve themselves as incomes increase with development, or when land claims have been settled.

The following recommendations are made with respect to the subject of alcohol.

1. Every effort should be made to improve the quality of life of residents of the North. If change is to be regarded as an inevitable fact of life in the North, then as a general rule it is considered that anything which eases the transition to new lifestyles and alleviates resultant stresses should lessen the need to drink.
2. Greater efforts should be made to improve the quality of alcohol education. The public must be made more aware of the undesirable consequences of alcohol misuse. It is recommended that substantial additional funds for alcohol education be made available through territorial government profits from liquor sales, the amount for the N.W.T. to be determined by the Alcohol and Drug Coordinating Committee. Also, alcohol education in good part is a community responsibility and communities should develop suitable programs with special funds provided by the Authority. It is also a school responsibility and should be prominently included in the curriculum.
3. The N.W.T. Liquor Ordinance should be amended to include clearly defined responsibilities of licensees, the responsibility of the R.C.M.P. for enforcing the liquor ordinances pertaining to licensed premises, a more effective process of prosecuting bootleggers, etc. Adequate legislation and enforcement policies can act as preventative measures in areas such as serving minors and those already intoxicated. Similar measures should be taken in the Yukon.
4. The "community development" approach to alcohol problems should be adopted as policy by the territorial governments.



## Action Communities

The strongest factor available to the native people in combating alcoholism is the strength of their society.

- a) There should be greater community involvement in the control of alcohol use. The availability of alcohol should be determined by local opinion and in accordance with the perceptions and values of each community. Alternative ways of handling alcohol could include a quota system, prohibition, removal of fortified wines and similar measures.
  - b) There should be greater community involvement in the consequences of alcohol abuse. Native people should be involved in legal and judicial procedures, particularly sentencing.
  - c) There should be greater community involvement in the development of remedial programs that lie within the context of the culture and traditions of the community. Examples are the "back to the land" project and alcoholics anonymous.
5. Within the action communities, the Company should be required to make financial contributions to the Alcohol and Drug Co-ordinating Council proportional to the size of its permanent staff.
  6. Funds should be made available by both levels of government and by the Company to maintain and expand treatment facilities:
    - a) A detox centre and half-way house should be established in each of the action communities.
    - b) A larger rehabilitation centre similar to Poundmaker's Lodge or Henwood should be established within the Greater Impact Region.
  7. There should be greater development of resource persons on alcohol problems through coordination of community services provided by NWT Department of Social Development, the R.C.M.P., corrections, and the Northern Health Service. Without creating a social planning bureaucracy, groups like the Interagency Committee in Yellowknife should be formed in each of the action communities to help achieve this coordination.



8. Training of resource people, especially native alcohol counsellors, should be initiated prior to pipeline construction. Such training should draw upon southern expertise as necessary. Resource people should, among other duties, serve as advisors to the Territorial Governments.
9. The Government of the Northwest Territories in particular should take certain steps to aid in the prevention of alcohol abuse:
  - a. The GNWT policy of alcohol pricing should be reviewed relative to prices of basic food stuffs throughout the territories. The effect of territorially uniform alcohol pricing and thereby providing alcohol at relatively lower costs vis a vis food in the more isolated communities than in the less isolated communities could be one of the contributing factors to the misuse of alcohol.
  - b. "Lifestyle" liquor advertising should be eliminated because it acts as a reinforcement to the idea that the "good-life" must be associated with drinking.
  - c. A policy on alcohol and drug abuse should recognize that people with alcohol or drug problems have a health problem, and should be eligible for treatment accordingly.
10. The Company must be responsible for the control of drinking and drug use within construction camps. Some means by which this might be accomplished are:
  - a. Licensed premises operated within the camps must comply fully with all NWT Liquor Ordinances.
  - b. Workers found taking liquor or drugs into the communities or bootlegging to local people should be fired immediately and returned to point of hire.
  - c. Enforcement of drug use legislation within camps should be carried out by the R.C.M.P.. and not camp security personnel.





TRANSCRIPT REFERENCES

CAGPL	Hobart, Vol. 113, 163 and 164
Foothills	Jensen, Vol. 165 and 166
COPE	Raddi, Bruce, Vol. 187
CYI	Cruikshank, McClellan, Johns, Jacquot, Vol. 151 Notti, Vol. 152 Sharpe, Vol. 153

References in community hearings to alcohol problems.



## Social Assistance

In the pipeline region, social assistance rolls and payments appear to have increased at the same time as more wage jobs have become available, a trend contrary to government expectations of what would happen with the expansion of major industry in the North. In the long term, the creation of a society in the NWT that is relatively free of "welfare" will depend on the stability and consistency of the economic base and the degree to which this base is compatible with the preferred economic behaviour and values of the people that depend on it. High welfare dependence among native people reflects at least in part the fact that the land based economy has become increasingly disrupted and inaccessible during recent decades, a process which has left these people with reduced rather than increased economic choices.

1. Because there is an apparent relationship between social assistance payments and social change, every effort should be made to make such change less disruptive than has been characteristic of the North in the past.
  - a. opportunities available to native people to participate in both the traditional and wage economies must be expanded.
  - b. projects must be undertaken with a view to keeping disturbances to the normal rhythm of life in communities down to an absolute minimum.
  - c. the "corrosive" nature of welfare systems must clearly be recognized. Attitudes that predispose towards welfare dependence can easily pervade a society and reduce the ability of people to look after themselves.
2. The Social Assistance Payments program in which welfare recipients are given financial assistance while being encouraged to seek means of self-support should be continued. The use of labour pools to provide work/training opportunities has had some success; this method should be further developed where it is useful.
3. Community Counselling Services should be continued throughout the pipeline construction period. In cooperation with local social development officers, the Company should undertake financial counselling to give native northerners a better understanding of money management.



4. Attention should be given to the housing, health and other social needs of elderly people who may remain in communities after family members on whom they depend have been drawn into pipeline employment.
5. The responsibilities of the GNWT Department of Social Development regarding the transfer of patients receiving health care in the south should be clearly defined. At present, this whole area, and what is expected of various agencies having a role in it, is rather vague.
6. The budget for social assistance payments should not be reduced in the expectation that pipeline employment opportunities will reduce welfare rolls. The experience to date has been that such rolls have risen rather than fallen in the short term as employment increased.
7. Training of community-level social workers should be encouraged to strengthen and expand programs and staff in all communities.

TRANSCRIPT REFERENCES

CAGPL	Boorkman, Weinstein, Vol. 159 Hobart, Vol. 163
Foothills	Jensen, Vol. 165
NWT IB/MA	Rushforth, Asch, Vol. 148 Asch, Vol. 160

References in community hearings to income sources





## Recreation

As hydrocarbon development proceeds, bringing rapid change to the communities of the Pipeline Impact Region, stress and social disorder may increase. Recreation, viewed in the broad sense of human growth and personal development, can play an important part in easing the process of social adjustment. Alcohol abuse, delinquency and stress in general may be lessened through sound recreation programs, thus improving the quality of life. The following recommendations are therefore put forward.

1. A recreation policy applicable to all parts of the Greater Pipeline Impact Region shall be developed and implemented which encourages the involvement of community residents in recreation and fosters the development of suitable recreational leadership. While such a policy must be based on the premise that recreation is a necessary part of social development, great care will have to be taken to ensure that notions of what constitutes recreation in non-native society are not imposed on native people.
2. The territorial and federal governments should develop recreational services in each territory which are at least comparable to the national level. Per capita recreation grants and capital construction grants should be increased, and funds should be made available for the training of community recreation staff in order to develop the personnel required to run effective programs. Wages paid in such programs must be comparable to regional standards to retain local resource people.
3. Emphasis should be placed on the development of those aspects of recreation programs that involve the interaction of people and that do not rely on extensive capital facilities. Greater priority must be given to the needs of native people within the overall community recreation programs. Recreation needs for pipeline workers should be considered separately from the needs of residents of small communities.
4. Government programs should concentrate more on the cultural aspect of recreation and less on sports. TEST and the Northern Games are examples of how programs can be more than just athletic competition and can serve individual needs and skills, especially for native people.



5. Recreation facilities should be used to enhance community recreation programs, not to replace them:
  - a. Each community should have a meeting place, but the building of large sports complexes should be avoided because of their high capital and operating costs, and because they tend to fix the pattern of recreation pursued.
  - b. Funds for building recreational facilities should be allocated on an equitable basis among communities, avoiding disparities.
6. The Pipeline Company must accept certain responsibilities with respect to recreation:
  - a) During the construction phase, facilities should be provided within camps for the use of employees.
  - b) Use of local community facilities by pipeline workers should occur only where it is feasible and desirable from the point of view of the community. The community must in all cases be consulted.
  - c) Recreation facilities built by the Company should be designed with a view to their use in communities after the construction phase is over.
  - d) The Company should not fund large recreation complexes in the major communities, as the operation and maintenance costs of such facilities are high and may create a reliance of the community on the continued munificence of the Company.

TRANSCRIPT REFERENCES

Foothills	Jensen, Vol. 165
COPE	Dittrich, Kylvic, Vol. 172



Action Communities

MVPI                    Dixon, Vol. 171

NWT/AM                Dusel, Vol. 173

Goulet, Vol. 189

References to recreation land use, sports hunting and fishing,  
tourism





## Legal Systems and Institutions

In advance of, and until well after the period of pipeline construction, the action communities will experience rapid population increases, inflation, pressures on housing and services, lack of recreational facilities, increased cash income, increased alcohol consumption and heightened racial tension. Southerners may bring with them new problems associated with organized and more sophisticated crime. Existing court facilities may be overloaded and institutions filled beyond their capacity. Efforts should be made to unify federal and territorial jurisdictions to eliminate unnecessary delays and provide more flexible and adaptable institutions of a greater capacity.

1. It is recommended that the federal and territorial governments immediately begin work to try to reach agreement on a more co-ordinated system of jurisdiction over all areas of law enforcement. If a permanent agreement cannot be reached by the two levels of government, it is considered essential that at least an interim agreement on a temporary or emergency basis should be reached to bracket the period of pipeline construction.
2. It is recommended that the Federal Government construct facilities in the region for a community-oriented juvenile training program.
3. It is recommended that both levels of government in full consultation with the native organizations, provide expanded training and orientation programs for personnel employed in northern correctional services. These programs should be especially designed for dealing with people of different languages and cultures. They must be run by recognized professionals in the field who are approved by the native organizations.
4. It is recommended that the federal and territorial governments cooperate to institute a permanent parole service in the territories, employing as parole officers both native and non-native personnel familiar with northern languages and problems. This would be accompanied with the termination of reliance on parole officers from southern centres, or the use of social development officers who are both overworked and untrained in parole supervision.



TRANSCRIPT REFERENCES

CAGPL	Boorkman, Vol. 159 Trusty, Vol. 162, 163
Foothills	Ellwood, Vol. 165, 166
CYI	Cruikshank, Vol. 151

References in community hearings to camp regulations, transients  
etc.



## Communications - Community Concerns

Communities in the region complain of inadequate communications facilities with respect to a variety of services. These complaints relate primarily to lack of basic telephone or radio communication between communities, lack of radio programs providing information on northern affairs and the southern-oriented content of most TV programs. There have also been requests for mobile systems to enable hunters and trappers to communicate with home settlements.

1. It is recommended that CNT should expedite extension of adequate telephone services to all communities well in advance of demands for pipeline services, so that community services are not relegated to a low priority position and thus would possibly not be available until the presence of pipeline construction and induced demands have levelled off.
2. It is recommended that, through its regulatory powers, the federal government ensure that capital costs incurred to meet the communication needs of the pipeline project and related activities are not passed on to the general public through increases in rates or by other means such as government grants or subsidies.

## TRANSCRIPT REFERENCES

CAGPL	Williams, Vol. 130 Hollands, Vol. 162
Foothills	Mirosh, Vol. 62, 63





## NORTHERN BUSINESS

1. The private economy of the Greater Pipeline Impact Region is at an early stage of development and is relatively undiversified. Business activity is dominated by large firms which are headquartered outside of the region and which operate within it for special purposes such as mining or the provision of transportation. Such firms fall into a wide variety of activity classes, including mineral exploration and production, transportation, public utilities such as power generation, construction, banking and finance.

2. The major characteristic that all of these enterprises have in common is that decisions concerning their involvement in the territorial economy are made outside of the region. Factors unrelated to the region often determine the nature and scope of their business activities in the territories. Some of the firms, notably the Hudson's Bay Company, Pacific Western Airlines, NCPC and Northern Transportation, have a much stronger historic association with the northern territories than do major oil and gas companies, but even in the case of such firms, territorial residents play no significant role in determining output and investment policies.

3. With but few exceptions, the large southern based firms function to transfer the resources of the region to southern locations. Spin-offs to permanent residents of the North tend to be rather small in comparison to income flows accruing to residents of the south. These spin-offs include a part of the regional employment base, considerable stimulus to local business, and some contribution to local taxation. While the importance of such impacts to various northern localities cannot be denied, it is nevertheless true that the major portion of the net benefits that these ventures generate are transferred outside the region.

4. What is true of outside domination of the private sector of the territorial economy is also true of the government sector. There is only a very small territorial tax base and all government spending relies heavily on transfers from southern Canada. Decisions made in Ottawa, far away from the scene of the actual spending, dominate fiscal processes within the northern territories. Crown agencies are predominant in sectors such as transportation and public utilities.

5. It is considered that the basic problem faced by the independent business community which is actually domiciled in the North (i.e., does not have corporate links with the south) is that it operates in an economy that is overwhelmingly dependent



on decisions made far beyond the region's boundaries by people that often have little understanding of its problems. Many factors apart from the economic well-being of the northern territories are taken into account when such decisions are made. Such factors would include, in the case of mining and oil and gas companies, the status of international mineral markets, and particularly the stability of alternative, less economically marginal sources. Other private interests -- for example, transportation, finance and construction -- tend to follow the lead of the mineral industries. Increased mineral activity leads to increased activity on their part. To some degree, government spending patterns would also respond to the level of private regional activity. However, national fiscal policy priorities would be a major factor in determining whether more or less money was available in the public sector of the regional economy.

6. The territorial resident/domiciled business community may be visualized as being attached to the end of a pendulum by an elastic band. Because it is so heavily dependent on externally induced activity, it will swing whichever way that activity swings. But because of the very large uncertainties that pervade the northern economy, it will typically tend to over- or under-shoot.

7. There is virtually no possibility that this pattern can be broken as long as the northern economy is dominated by large mineral resource oriented projects which are necessarily dependent on external markets, but it can perhaps be modified. Pendular swings have been one characteristic of the northern economy. A rising level of activity, which has brought growth in population and income, has been another trend, and indeed a much more positive one in terms of the future stability and viability of the regional business community.

8. Advantage should be taken of the potential of northern regional markets for future expansion. It is therefore proposed that territorial resident/domiciled firms should be induced to concentrate much more of their activity in areas related to the long term growth of the territories and leave a greater portion of the more ephemeral, even if temporarily more lucrative, boom induced activity largely to firms not based in the region. In this way, northern businessmen could perhaps attain some measure of control over their own economic future and perhaps reduce some of the uncertainty which afflicts them. This is not to say that regionally based firms should not have an opportunity to participate in boom inducing resource projects. At a minimum,





regionally based businesses should have the right, if they so choose, of equal opportunities to compete with southern based firms for business related to such activities. However, over the longer term, it is suggested that business development programs by government should be directed to encouraging territorially based businesses to expand their role in more "normal", regionally related business activities.

9. Indeed much of the northern business community already has this orientation and perhaps the thing that is needed is the strengthening of an existing pattern. Business firms that are domiciled in the two northern territories are active in many sectors. In the resource industries they are active in areas such as small scale saw milling, commercial fishing such as the Great Slave Lake Fishery, and in tourism and recreation. Insofar as public utilities are concerned, an example of an activity in which a small scale regionally owned and operated business firm has been moderately successful is the small airline. In the finance sector there is a scattering of credit unions. In merchandizing, there are stores and specialty shops which range in size from the fairly large to the small scale local store. There are also a number of co-operatives. A significant portion of the catering industry is in regional hands. In construction, there are many small regional contractors able to undertake a range of tasks. There are small scale manufacturing firms, and arts and crafts activities. The fur garment industry of Tuktoyaktuk and tent manufacturing plant in Fort McPherson are examples. Not all such firms cater wholly to the local market, but a significant volume of their sales are made locally. Their welfare is therefore strongly dependent on the growth of the regional income and employment base.

10. Apart from the major problem of being able to exercise little influence on the economy in which they operate, northern businessmen are faced with a variety of problems that are an integral part of the regional economies of the northern territories. These problems would likely affect those economies regardless of what external influences were present. Local markets are small and connections among them are tenuous. The supply of a commodity may exist in one community and the demand for it in another without any means of bringing prospective buyers and sellers together. Local firms are a long way from supply sources and transportation is a major component of their cost structure. Because much transportation is seasonal, inventory costs are high. There are severe problems of access to capital markets. Loans from standard lending institutions are





difficult to obtain because uncertainty is such a strong factor in the operation of the regional firms, many of which are viewed as poor risks as borrowers. There are problems in the supply of managerial talent. Northern businessmen have not had an opportunity to develop the skills that are typically characteristic of successful businessmen in southern cities. In general, business firms domiciled in the North suffer from many of the disadvantages of small business firms elsewhere, but with added problems arising out of adverse locational factors and the extreme northern climate.

11. Many territorial firms have already invested in capital related to recently increased hydrocarbon exploration. There is now some indication that such investment may have been premature. Expenditures on exploration have recently declined in regions such as the Mackenzie Delta and there is some prospect that they will not pick up again until resource discoveries have become more promising and government has given a clearer indication of the regulations it will apply to the northern oil and gas industry. Reports from areas such as the Mackenzie Delta are that regional businessmen are already caught in a highly unfavourable position and that several are contemplating liquidation. Some have already taken that step. This demonstrates the dangers of dependence on a highly mobile, high risk industry such as oil and gas exploration which causes surges of activity and cannot really be exploited to provide a basis for stable and smooth growth. When exploration accelerates, and there is talk of pipelines and other such developments, business expectations tend to sky-rocket and many investment decisions are made that, on reflection, should not have been made. An almost inevitable bust follows the boom.

12. Unless great care is taken to avoid such a situation, the Mackenzie Valley pipeline could result in a serious distortion of the territorial small business sector. This could be damaging not only to many individuals, but to the longer run orderly development of a regional economic and commercial base. Not only might local entrepreneurs be drawn excessively into ventures directly associated with the pipeline, but there would likely be significant in-migration of small scale capital from the south, thereby distorting investment patterns even further.

13. An excessive concentration of business firms and regional supply in the pipeline sector could interfere with the ability of local suppliers to meet normal community needs. In a mature economy, firms comprise a network of interdependent units. It is



the circular flow of goods and money throughout this network that keeps the firms in business and provides the regional private employment base. The Mackenzie Valley is still far from being a well-rounded and integrated economy. The development of such an economy is a possibility, but a prerequisite would be that population and the export oriented activities on which the region basically depends grow in a somewhat orderly manner. The problem with growth induced by projects as massive as the pipeline and oil and gas field development is that they can have an extremely wrenching effect upon a small, immature economy. Large scale, short term projects often do not represent growth as much as the sudden transformation of an economy. Unless sufficient precautions are taken, the fragile regional economy of the Greater Pipeline Impact Region could be thrown off balance by the disruptive effects. Recovery over the long run to a condition of stable growth could be extremely difficult.

14. The main objective that should be pursued with respect to northern business should be the development of a sound, interdependent, local and regional industrial/commercial structure that is able to "stand on its own two feet" with only limited subsidization, protection and regulation. Excessive involvement of local business in the pipeline boom will hinder rather than help this objective. The approach that government might use to attempt to attain it would be to offer incentives to local businessmen as an inducement to continue directing their energies towards servicing the relatively small but growing non-pipeline market, particularly during the pipeline construction period.

15. Resident firms could, however, be encouraged to participate in secondary activities related to the pipeline. For example, they could undertake several aspects of construction in the major "action" communities, such as supplying some local goods to pipeline camps, etc. But they should not be encouraged, as part of regional economic development programs, to become involved directly in pipeline construction.

16. A number of programs should be undertaken to channel regional firms into non-pipeline roles. One of the factors which has inhibited the growth of such firms to date, is that the bulk of the goods and services consumed in the region tend to be imported directly from the South; that is, without the use of northern middlemen. Steps should be taken to break this pattern or at least limit it. Government, for example, should review its own re-supply procedures in order to determine which of the large





number of items it purchases and ships north could be provided by northern suppliers, along the lines suggested by the recent federally appointed Small Business Task Force. It should review its contracting procedures to determine whether northern construction firms are being given a "fair cut" in the government construction market.

17. It is important that policy thinking focus not on protection, but on the removal of the obstacles which currently prevent northern business from functioning efficiently. Special protective measures should be used where they are absolutely necessary, but only after it is clear that business ventures have potential social spin-offs of a sufficient magnitude to outweigh the costs implicit in such measures.

18. A major obstacle to the competitiveness of northern firms is the quality of entrepreneurship. Northern businessmen would seem to have much to learn about management methods and the identification of business opportunities. Services that help them do these things should be improved and extended, and the pipeline company could play a role in this. Native people are at a particular disadvantage as entrepreneurs because not only must they learn how to operate businesses, they must cross cultural barriers to do so.

19. During the pipeline construction period, northern business could be caught in a rather serious cost squeeze because of labour shortages and rising wages. This would be particularly true in the case of firms whose involvement in the pipeline and related projects was limited -- that is, the firm would not have access to the "cost plus" money flows that could result from the pipeline. If it became a matter of policy that northern businessmen should concentrate on "normal" activities that will take place concurrently with pipeline construction, and if the services performed by these firms were deemed to be important to long-run developmental objectives, then subsidization may be needed as a compensation for rising wage costs. Otherwise the firms might not be able to retain labour. Alternatively, some broader system of regulating all northern prices and wages, including pipeline prices and wages, might be considered, but the administration of such a system could prove impossible. On balance, some method of indexing the costs of essential northern businesses and, by means of a program of subsidies, enabling them to continue to operate despite the pipeline would seem desirable.





20. There will be a need for a continuous monitoring and information service relevant to territorial business. This could function to disseminate information, to ensure that agreed standards of conduct are met, to ensure that local markets are not running short of goods and services because of concentration on pipeline related demand and to bring the problems of business to the attention of government. An organization like the Territorial Business Liaison Group proposed by Arctic Gas would seem worthy of consideration. However it would have to be expanded to be fully representative.

21. There are currently very few native entrepreneurs, and native people do not have a strong business tradition. In some of the native communities however, co-ops have been active for sometime. A device that should be given some attention by government and the native organizations is the village or regional corporation which could become a principal instrument through which native people might participate in the pipeline and in the growth of industrial activity more generally. Such corporations could, among other things, undertake the exploitation of local resources important to pipeline and related construction; for example, gravel and timber. Quite apart from such possibilities however, the territorial government should give much more attention than is currently the case, to the encouragement of native enterprises in the small communities. Loan funds and management training programs should be extended and made more accessible throughout the territories.



SPECIFIC RECOMMENDATIONS AND COMMENTS

Transportation

Regionally domiciled carriers should have an opportunity to share in pipeline related traffic. However, care must be taken to ensure that there is sufficient capacity available to meet regional transport needs at all times..

1. It is recommended that local carriers be given first preference over outside carriers in serving pipeline related traffic..
2. It is recommended that, in cases where local carriers do not have sufficient equipment to serve both normal and pipeline related traffic, the Pipeline Company lease the required equipment to the local carriers for whatever period is required at a cost equivalent to annual amortization. At the end of pipeline construction, the local carrier would have the option of purchasing the leased equipment at a cost equal to the remaining principal.
3. It is recommended that any contracts for the carriage of pipeline traffic include escalation clauses to ensure that the effects of material and labour inflation are passed on to the Company.



## Wholesale/Retail Trade

Retail and wholesale firms domiciled within the region should not be encouraged to enter into the boom-bust cycle through actively seeking and obtaining business that is directly pipeline related. Instead such firms should be encouraged to use the pipeline construction period to capture a larger share of "normal" long term business. Pipeline business will be an extremely attractive and lucrative market but only for a very short period. Incentives must be provided to influence local firms to concentrate on capturing more normal business through planned expansion at a rate consistent with non-pipeline market growth. Care must be taken to ensure that wholesale/retail trade facilities, functioning as an integral part of the community re-supply system, are not disrupted during construction.

1. It is recommended that an impact fund be established under the Authority and financed by the Company to compensate local firms for inflation induced by the pipeline (e.g. labour, transport, etc.). This fund should be used to offset the effects of cost - push inflation on the pricing of normal community supply.
2. It is recommended that the government take a more active role in encouraging local firms to concentrate on normal trade. Assistance by government must be provided in the areas of financing and management techniques both during and after pipeline construction. Government assistance must be available only to regionally domiciled firms, and to new or existing local firms that are expanding or developing normal trade. The financial assistance would be in the form of providing low cost loans, recompensing local firms for excessive inventory costs, and providing lump sum grants to assist in the construction of new facilities.





## Construction Industry

In the short term, a significant portion of secondary construction will be undertaken on behalf of the Company. Over the longer term, continuing secondary construction will be undertaken on behalf of government and the private sector. Secondary construction undertaken directly or indirectly for the Company should be used as a foundation for the long term growth and development of the regional construction industry.

1. It is recommended that local construction firms be given first right of refusal on any secondary construction which is the responsibility of the Company.
2. It is recommended that all tenders on contracts that the Company believes can be performed by small to medium sized firms should be advertised in the Greater Pipeline Impact Region at least one week prior to being advertised outside the territories.
3. It is recommended that all contracts be on a cost plus basis.
4. It is recommended that, if a project is beyond the capacity of any individual contractor, the Company should, by providing project managers, enable regional contractors a greater opportunity to compete. These project managers would assist in assembling consortia of local firms to undertake a particular project.
5. It is recommended that, in situations where local contractors are deficient in necessary equipment, the Company undertake the role of broker in making leasing arrangements. The cost to the local contractor should be no higher than if it were a southern firm.
6. It is recommended that the government should assume the Company's responsibilities in respect to local contractors in the period following pipeline construction. That is, local contractors would be given first refusal on any government sponsored project. Other provisions outlined here could also be applied.



Territorial resident/domiciled contractors are often at a competitive disadvantage relative to non-domiciled firms in bidding on contracts arising out of construction projects within the territories. In the Greater Pipeline Impact Region, firms located in smaller communities tend to be at a competitive disadvantage relative to firms in larger communities.

7. It is recommended that a standard procedure be initiated for the publication of tender notices and receipt of bids throughout the Greater Pipeline Impact Region.
8. It is recommended that a special office funded by the Company be established to administer this bid depository throughout the Greater Pipeline Impact Region.
9. It is recommended that any "information systems" installed in connection with programs such as the proposed Manpower Delivery System be used to transmit information concerning tenders and bids and that use of such facilities be made available to regional contractors at no charge.
10. It is recommended that all territorial resident/domiciled contractors of the Greater Pipeline Impact Region be registered with the bid depository to ensure that all are made aware of available opportunities.



### Availability of Loan Capital

Loan capital should be made more widely available to N.W.T. resident/domiciled firms but not without recognition that such firms operate in a volatile economy and that by normal standards, a significant proportion of them do not have a sound record on matters such as bankruptcy and default.

1. It is recommended that limits on the Small Business Loan Fund be increased. The rate of interest applicable to such loans should be set at levels comparable to similar loans in southern Canada.
2. It is recommended that similar increases should take place in the Indian Loan Fund and Eskimo Loan Fund. Rates of interest applicable to these Loan Funds should also be comparable to national levels.
3. It is recommended that a subsidy be established to compensate any territorial firms that have problems in meeting interest payments at the levels indicated in the foregoing. This is recommended because it a) would force territorial firms to try to be competitive on the same basis as firms from the south and, b) would lead to a "second round" review process in which firms taking advantage of the territorial Loan Funds would be required to re-examine their operations if further assistance was required.
4. It is recommended that funds be made available to finance inventories under each of the foregoing programs because costs associated with inventories are unusually high in the Greater Pipeline Impact Region. Firms operating under more isolated circumstances should be given more liberal assistance than firms operating where year round surface transportation is available.
5. It is recommended that permanent offices to administer each of these funds should be set up in the action communities of the Greater Pipeline Impact Region.
6. It is recommended that the Federal Business Development Board should be directed to locate one or more regional offices in the Pipeline Impact Region.





7. It is recommended that, in anticipation of high earnings on the pipeline, the governments of the two territories undertake a concerted effort to establish credit unions in the communities of the Pipeline Impact Region. One approach to this might be to establish a single credit union to serve the needs of the Greater Pipeline Impact Region as a whole, or to establish at the most, two or three such organizations, each one serving a particular region. Northerners who may be employed on the pipeline should be made fully aware of the use and potential of these institutions and should be encouraged to use them. The credit unions could become a source of local loan capital.
8. It is recommended that education programs should be undertaken by the governments of the Yukon and Northwest Territories to encourage savings and investment habits among northerners. Courses should include material on financial management and the identification of business opportunities.



## Bonding

Evidence on this subject indicates that bonding is very difficult for N.W.T. resident/domiciled contractors to obtain because few can meet the standards required by surety companies. The fact that territorial firms are unable to obtain bonding could prevent them from realizing many profitable opportunities.

1. It is recommended that bonding be made available in whatever amounts are required to enable local firms to take advantage of business opportunities arising out of secondary and tertiary activities induced by the pipeline, especially opportunities that would enhance the long term growth of the region and the particular firm.
2. It is recommended that when firms make it a practice to expand by drawing down their working capital reserves they should not be able to avail themselves of special bonding provisions.



## Regulation of Business

It is proposed that the expansion of resident/domiciled business should be oriented much more toward the long term normal growth of the Greater Pipeline Impact Region than to more short-lived events like pipeline construction. However, there can be no hard and fast rules on this issue because northern firms will want, and should indeed be entitled to, a share in the business generated by the pipeline. A flexible policy of guiding and encouraging Northern firms into decisions and policies which are in keeping with longer term growth considerations is preferable to one that sets out rigorous rules and sanctions.

1. It is recommended that a permanent body be established, composed of representatives from the petroleum industry, the Chamber of Commerce and territorial governments to monitor the evolving business relationship between northern firms and the pipeline. This committee would have as principal, immediate roles the dissemination of information to regional firms, the setting of quotas for various types of goods or services that such firms might supply to the pipeline, and resolving problems encountered by regional business as a result of the pipeline.
2. It is recommended that, as a further responsibility, this committee should advise government on long term planning for the orderly expansion of northern business. Membership in the permanent body might also include the regional business advisory agency previously mentioned.





## Government Programs and Incentives

Government programs and incentives should be designed to encourage the retention of regional income and expansion of employment opportunities for permanent residents. Therefore, government assistance to business should encompass both small and large business operations. Assistance to larger scaled business development could be provided through a development corporation, while an agency of government could concentrate on assisting small business.

1. It is recommended that a financial agency be established to compensate for the fact that the Greater Pipeline Impact Region lacks many of the advantages of southern regions, in which financial institutions are well represented and able to cater to various needs. Until significant growth has taken place in the North, such facilities will not appear there and government should therefore play a role in providing a range of financial services to northern businesses. This agency should concentrate on serving the needs of small businesses in fulfilling the same kinds of functions as financial institutions in the South. Another role should be the promotion of the growth of financial institutions in the northern territories. Ideally it would at some point put itself out of business when the regional economy had developed to the point where private industry found it attractive to establish the same service. In effect, this proposal amounts to the creation of a government insurance and loan scheme, not too dissimilar in concept from government health, automobile or other insurance schemes.



2. It is recommended that a development corporation (such as exists in many of the provinces) be established for the Greater Pipeline Impact Region. The corporation should have a board of directors, consisting of government personnel and business people who have firms headquartered in the North. It is further recommended that the corporation, at the discretion of the board, provide low interest investment or operating capital to firms establishing or having headquarters in the region. Unless the native people wished this, the development corporation would not have any jurisdiction in areas encompassed by a land settlement. Such areas would presumably have their own development institutions which would decide on the degree to which they wished to use the services at the development corporation.
3. It is recommended that the corporation provide assistance to established firms now serving the "normal market" and to new firms intending to serve the same market.
4. It is recommended that financial assistance provided by the corporation include loans to individuals or resident groups in the Greater Pipeline Impact Region who wish to acquire an ongoing business operation which is controlled by outside interests.
5. It is recommended that new or existing businesses be given government assistance in procuring adequate management expertise. It is suggested that government directly hire management personnel or provide funds to firms for hiring managers. The outside management personnel could be double staffed with the resident owner and operator for a period of from 3 to 5 years. In this way management expertise could be developed through on-the-job experience.
6. It is recommended that a portion of business development loans to regionally headquartered firms be forgiven in some relation to the number of permanent jobs provided to territorial residents.
7. It is recommended that government give preference to regionally domiciled firms in the acquisition of supplies and services for all government needs in the northern territories.



## Native Entrepreneurship

Major developments over the long term could provide commercial opportunities for native business institutions that may result from a land claims settlement or that could be organized in some context other than the settlement. In the short term, a Mackenzie Valley pipeline will offer commercial opportunities both during construction and in the post-construction period. Examples are contracts from the Company for right-of-way clearing, snow road preparation and, in the post-construction period, service contracts for maintenance of pipeline operating facilities (i.e., helicopter pads, permanent access roads, right-of-way maintenance, communication towers, etc.). Native community or regionally based corporations could provide a means for native participation in the pipeline project that would in many respects be superior to participation on an individual basis as wage labour. However, as a principle, no pressures or coercion should be exercised on native communities, organizations or individuals to induce them to participate in pipeline related development in any manner whatsoever. Whether they participate or not must be a matter for freely determined choice.

1. It is recommended that the Company give preference to native controlled companies in the tendering of contracts whenever their bids are reasonably close to low bids. (This might be within 10% or 15% of the low bid.)
2. It is recommended that, to the extent possible, a list of contract work be made available to native organizations one or two years prior to the time when such work is to be undertaken. The list of contract work to be tendered should include specifications in sufficient detail as to allow the native corporations to assess the feasibility of bidding. Sufficient time should be allowed between the award of the contract and the date on which the project is to commence to allow for personnel recruitment and company organization.
3. It is recommended that the same preference in awarding contracts be given to any joint bids with either local or southern firms when a native company is a significant partner in the joint venture.





## Commercial Services

Commercial services in the region can be grouped under three broadly related areas: personal services, business services and accomodation plus food (including tourist services).

There are two basic general issues related to a pipeline. The first is the effect, in the short and longer term, of the construction and operation of the pipeline (including related gas field development) on the market for commercial services. The second is the effect, primarily in the short term, that the construction of the pipeline may have on existing commercial services as a result of its impact on both the availability and price of labour. This will be most apparent during the construction phase when the pipeline will tend to compete with commercial services for labour. The food and accomodation industries in particular could have difficulty in meeting or maintaining their minimum labour requirements. In any event, they will very likely be faced with abnormally high turnover rates plus the necessity to substantially increase wage rates and so increase their prices. Although after completion of pipeline construction there should be a dramatic easing of the labour situation, the problem of higher labour costs will remain. Some longer term protection will be required to ensure continued profitability of these particular sectors during both the construction and post-construction periods.

1. It is recommended that the territorial governments or the Authority set up a program to liaise with the major catering firms in the Greater Pipeline Impact Region communities to encourage them to develop methods of co-operative operation and at the appropriate time to assist them to bid jointly on pipeline camp supply contracts.
2. It is recommended that when a pipeline construction permit has been granted, the Company be made responsible for ensuring that sufficient eating, recreation and accomodation facilities are available in selected communities (the "action" communities discussed in another section) to meet their own direct requirements plus the indirect requirements of transients. To the extent compatible with the long term needs of the region, the existing industry should be actively encouraged to provide the required facilities. The co-ordination of this effort should be the responsibility



of the Authority working in cooperation with the territorial governments.

3. It is recommended that a "wage increase compensation fund" be established under the Authority into which payments are made by the pipeline Company. This fund would be used to compensate existing firms in the commercial sector for unjust and extreme pipeline induced increases in wage rates and labour turnover during and immediately after the construction period.
4. It is recommended that a special ameliorative program be set up under the Authority for critical cases of temporary labour shortage experienced by existing business because of pipeline construction. This program could take the form of a special labour pool which would be recruited from outside the territory and maintained by the Company during the construction period. Appropriate personnel from this pool would be made available at predetermined wage rates to existing employers who could demonstrate that they were unable to replace workers leaving for direct pipeline jobs.

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## INTRODUCTION

Terms and Conditions pertaining to employment and training are intended to ensure that the employment benefits represented by the Pipeline Applicants in fact materialize if a pipeline is to be built. These conditions are necessary because mechanisms for achievement of employment benefits represented have not been clearly laid out by either Applicant. If there is validity in assuming a relationship between employment benefits and a higher standard of living and also equality of opportunity for northern Canadians and in particular native people, there must be a practical apparatus for facilitating participation in the project work force.

General principles which have been assumed in evolving these terms and conditions are as follows:

1. Native people and other northern residents must be given an opportunity to participate in project employment and training. Professor Hobart, in his evidence to the Inquiry stated that pipeline construction would only be of benefit to native people if it allowed them to acquire useful skill training during the construction phase.
2. Native and other northern residents should be left to make their own choices as to whether they wish to engage in pipeline employment and training. The choice must be a free and informed choice with the individual having full access to the following information before making such a choice:
  - a) the nature of project training and employment;
  - b) the duties and obligations of an employee;
  - c) the duties and obligations of Union membership;
  - d) life in a pipeline camp;
  - e) the consequences of choosing project employment, i.e: separation from family and community, income effect on family, etc.



3. A unique preferential access and support system will be necessary to ensure the training, employment and retention of northerners on the project. Some of the features of this preferential access and support system include:

- a) extensive pre-employment orientation and training;
- b) priority or preferential placement of native and other northern residents to pre-job training, on-the-job training, and employment;
- c) counselling;
- d) special manpower delivery apparatus to ensure compliance with terms and conditions.

In order to achieve northern employment participation, it is vital that the parties concerned with construction and operational aspects of a gas industry be involved completely in the planning of manpower delivery prior to the actual commencement of construction. Evidence by witnesses advising on the Alaska experience on the Trans-Alaska Pipeline System (TAPS) project as well as Canadian government, Northwest Territories (NWT) government officials, native organizations, management and union representatives, maintained that for native employment and training programmes to be successful, it is imperative that all parties concerned be involved from the very beginning.

Bearing in mind that there is some lead time between the initial consideration of a pipeline project and the eventual commencement of project construction, if the project is approved, Canada is in the unique position of being able to plan and formulate terms and conditions and regulations suitable to respond to the concerns of northern residents. Recruitment information, orientation programmes, a manpower delivery system, training and employment programmes vital to the successful implementation of the pipeline guidelines introduced in 1972, can be put into effect during the available lead time.



Another justification for the nature and form of these terms and conditions is that evidence presented to this Inquiry has indicated that present labour, management and government circumstances pertaining to employment and training would constrain northern resident access to project employment.

Since labour supply to the project would be entirely controlled by pipeline and construction trade unions and since these unions have their hire halls located in the south, northern access to the unions is now severely restricted. Evidence to this Inquiry has suggested that it would be impractical for the Unions and undesirable if we wish to discourage massive in-migration to the region, to have union hire halls in the north for this project. Also, the present circumstances do not allow for preferential placement of northern people in project employment or training opportunities in project construction activities. However, the applicants have instituted preferential access and placement of northerners to training for operations, maintenance and other aspects of the petroleum industry. Operations phases of the industry are not as labour intensive as the construction phases. Restriction of present applicant programmes to operations training does not facilitate development of skills in the pipeline building and construction trades. These latter crafts, if developed in the northern workforce, would be of substantial benefit to the region and to the individuals developing such skills.

If the project is to be undertaken, we have recommended that a separate northern manpower delivery system (NMDS) should be adopted. This would be set up as an agency reporting to the relevant authority overseeing compliance with all terms and conditions but separate from and independent of the existing government agencies presently providing employment and training services. The nature and form of the suggested employment and training terms and conditions, as well as the necessity to involve not only government agencies but also native organizations, unions, the owners and





contractors in the planning and implementation of manpower delivery to the project, requires the separation and independence of the NMDS. Evidence from government witnesses and others to this Inquiry leads us to the conclusion the government agencies have not yet developed a systematic and co-ordinated approach to facilitating northern resident access to project training and employment.

The employment participation of native northerners in past projects and industrial developments in the region has been largely unsuccessful. Perhaps these failures have been due to the failure of the instigators to design environmentally, socially and economically appropriate technologies suitable to the needs and aspirations of residents of the region. Perhaps they have been due to failure to consult with the native people whose employment participation was being sought or to failure to modify design of these developments after local concerns have been concerned through a consultative process. If this project proceeds and if northern native involvement in the project is to be successful, the project must be developed in such a way as to ensure that it does respond to the needs and aspirations of the people who live in the region.

We have also been concerned about the apparently elaborate apparatus needed to comply with the employment and training terms and conditions particularly in view of the evidently small size of northern workforce which would be the clientele of the proposed NMDS. To meet this concern, we have suggested vesting the NMDS with the suitable powers to modify its own structure and function with the approval of the relevant authority in response to the level of demand for its services. If substantial participation in employment and training is sought by native northerners, then we feel that the suggested system is appropriate. If only limited participation materializes, the system suggested could be modified. We do not feel that we should design a system that responds to a specific pre-conceived level of demand for northern employment



and training because individuals would make their own decisions whether or not they wish to avail themselves of employment opportunities. Also, present available workforce estimates are based on estimates of those not presently working and do not adequately reflect the potential degree of participation of those presently employed and those entering the workforce for the first time. The latter includes women and those nearing completion of their schooling.

In formulating these terms and conditions, we have tried to be as practical as possible while recognizing the persuasive philosophical arguments that have been made by witnesses to this Inquiry. We feel that we must offer concrete proposals for consideration by this Inquiry so that a meaningful and viable plan for northern participation in the project can be developed.

#### COVERAGE CLAUSES

1. THESE TERMS AND CONDITIONS SHALL APPLY TO CONSTRUCTION OF A GAS PIPELINE, COMPRESSOR STATIONS, GAS PLANTS, SUPPORT AND OTHER PIPELINE PROJECT RELATED ANCILLARY FACILITIES, AND TO EXPLORATION, DEVELOPMENT AND PRODUCTION, OPERATIONS AND MAINTENANCE OF A NATURAL GAS INDUSTRY AND TRANSPORTATION SYSTEM. THIS COVERAGE IS HEREINAFTER REFERRED TO AS THE PROJECT.
2. THESE TERMS AND CONDITIONS SHALL APPLY TO MACKENZIE VALLEY COMMUNITIES AND SUCH OTHER COMMUNITIES IN THE NORTHWEST TERRITORIES AND YUKON TERRITORY AS WISH TO BE INCLUDED UNDER A MANPOWER DELIVERY AND EMPLOYMENT SERVICE. AT THE VERY LEAST, COVERAGE SHALL INCLUDE COMMUNITIES IN THE DISTRICT OF MACKENZIE AND NORTHERN YUKON.



If it is intended that the gas exploration and producing industry be included in terms and conditions for a pipeline permit, vis à vis employment, then specific clauses respecting inclusion of this aspect of the industry should be included. It can be argued that the entire gas industry from exploration through transportation to markets should be included for coverage under an employment and training system pursuant to the pipeline project. At present, this is already the case. Nortran handles training circumstances for the producers as well as the pipeline applicants. The difficulty in including all aspects of the gas industry in a preferential hire situation, is that we have developed a disposable manpower delivery service. Obviously, we should not insist that the gas industry use a manpower delivery service in perpetuity but only in the initiation of the industry. As oil companies and other contractors become used to the methods for retaining northern labour in the workforce, the need for a comprehensive manpower delivery service does diminish. Therefore, we should insist on inclusion of the gas industry in initial provisions for a manpower delivery service, but upon the disposal of the delivery service after pipeline construction, the gas industry should revert back to utilization of existing line agencies, such as Canada Manpower and the Territorial Government.

It is similarly difficult to separate the applicability of terms and conditions between the gas industry and the petroleum industry generally. Thus, gas exploration is inseparable from oil exploration and these terms and conditions should be binding on petroleum exploration activities generally. Consideration, at a later date, could be given to expanding the coverage of these terms and conditions to the proposed oil industry and associated transportation system.

There is no reason why the preference system built into these terms and conditions should terminate with the disposal of the manpower delivery service however. In fact, they should be made to be binding on the gas





industry throughout the tenure of its existence in the Mackenzie. Therefore, the apparent dilemma which is implied by inclusion of an operating gas industry with the preference system and the disposable manpower delivery service is resolved by the permanence of the preference mechanism and the impermanence of the delivery mechanism. Presumably, as employment opportunities expand and/or stabilize, existing agencies can modify their structure to accommodate emerging requirements for labour in the Mackenzie.

With respect to geographical coverage of the preference system and manpower delivery, we tend to favour one which covers Mackenzie Valley and northern Yukon settlements only. The reason is that the cost of implementing manpower delivery services in other communities outside these regions would likely to be prohibitive. However, we do wish to insure that northern residents not in the region have access to the services of manpower delivery. The dilemma is whether we enable residents outside the Mackenzie Valley to be included under a preference system. It would only be difficult from a logistics point of view to include these people. It may be less difficult from a philosophical point of view. Note that one of the applicants, Foothills, has instituted a preference system but applied it only to the Mackenzie Corridor communities. They apparently have specifically excluded some communities in the Slave region. This is unfortunate and not to be encouraged for the proposed service.

3. THESE TERMS AND CONDITIONS SHALL BE APPLIED TO THE GAS INDUSTRY AND PIPELINE SYSTEM IN THE MACKENZIE VALLEY FOR THE ENTIRE LIFE OF THE INDUSTRY IN THE REGION.

The purpose of this recommendation is to enable coverage for the entire gas industry for the life of the industries with respect to the retention of northern residents. Terms and conditions should be binding for the life of the industry and therefore should be applied to both construction and operations phases of



this industry. This implies that a mechanism must be established to ensure equitability of access to employment opportunities on pipeline operations, gas plant operations and ongoing petroleum resource development in the Delta. This recommendation also assumes that the manpower delivery service is disposable. The purpose of this disposability is to enable the existing manpower agencies to assume more responsibility for manpower delivery as the size, complexity and magnitude of manpower requirements begins to diminish. The existing agencies can assume responsibility for manpower delivery after construction phases are finished.

#### RESIDENCY CLAUSES

4. FOR THE PURPOSE OF PROJECT EMPLOYMENT AND TRAINING A "PERMANENT NORTHERN RESIDENT" IS DEFINED AS A PERSON:
  - a) WHO HAS RESIDED IN THE NORTHWEST TERRITORIES ON A CONTINUOUS BASIS FOR 10 YEARS IMMEDIATELY PRIOR TO THE DATE UPON WHICH THE RIGHT OF WAY PERMIT IS GRANTED; OR,
  - b) WHO HAS RESIDED FOR 75% OF HIS OR HER LIFE IN THE NORTHWEST TERRITORIES; OR,
  - c) A MINOR WHOSE PARENT HAS RESIDED 75% OF HIS OR HER LIFE IN THE NORTHWEST TERRITORIES.
5. FOR THE PURPOSE OF PROJECT EMPLOYMENT AND TRAINING, A "NORTHERN RESIDENT" IS DEFINED AS A PERSON WHO HAS RESIDED IN THE NORTHWEST TERRITORIES ON A CONTINUOUS



BASIS FOR ONE YEAR IMMEDIATELY PRIOR TO THE DATE UPON WHICH A RIGHT OF WAY PERMIT IS GRANTED.

6. A PERSON LIVING IN THE NORTHWEST TERRITORIES SHALL APPLY TO THE NORTHERN MANPOWER DELIVERY SYSTEM FOR CLEARANCE AS A "PERMANENT NORTHERN RESIDENT" OR "NORTHERN RESIDENT". THE PERSON MAKING SUCH AN APPLICATION SHALL ESTABLISH, TO THE SATISFACTION OF THE NORTHERN MANPOWER DELIVERY SERVICE, HIS OR HER LENGTH OF RESIDENCE IN THE NORTHWEST TERRITORIES.
7. NO UNION SHALL ACCEPT AN APPLICATION FOR MEMBERSHIP OR DISPATCH ANY PERSON TO A PROJECT JOB WHO IS PHYSICALLY PRESENT IN THE NORTHWEST TERRITORIES, UNLESS THAT PERSON HAS BEEN CLEARED BY THE NORTHERN MANPOWER DELIVERY SERVICE.
8. THE UNIONS, OWNERS, CONTRACTORS, AND THE APPROPRIATE FEDERAL GOVERNMENT DEPARTMENTS AND PROGRAMMES SHALL INSTRUCT THEIR PERSONNEL TO COUNSEL AND ADVISE SOUTHERN CANADIANS AGAINST GOING NORTH IN SEARCH OF PIPELINE CONSTRUCTION EMPLOYMENT. THEY SHALL COOPERATE AND COORDINATE INFORMATION PROGRAMMES AND CAMPAIGNS TO INFORM SOUTHERN CANADIANS THAT THEY MAY ONLY OBTAIN SUCH EMPLOYMENT THROUGH UNION HIRING HALLS IN SOUTHERN CANADA.
9. SERVICES OF THE NORTHERN MANPOWER DELIVERY SYSTEM SHALL BE AVAILABLE ONLY TO "PERMANENT NORTHERN RESIDENTS" AND "NORTHERN RESIDENTS". NO SERVICES RELATED TO THE PROJECT





EMPLOYMENT AND TRAINING SHALL BE AVAILABLE TO PERSONS OF SHORTER THAN ONE YEAR'S RESIDENCY.

The Residency Clauses have two distinct purposes:

- a) They are used to identify those persons who shall be permitted direct access to pipeline and related employment in the North. All persons who do not fall within the definitions of "Permanent Northern Resident" or "Northern Resident" must make application in southern Canada for project employment. These Southern applicants will generally seek employment through union hiring halls in Edmonton and will be dispatched to employment positions in the north through southern hiring halls.

Any person travelling to the Northwest Territories in search of project employment will be denied access to such jobs and will be advised to apply in person at the appropriate union hiring hall in southern Canada.

All parties have recognized the lure project employment has upon many Canadians resident in southern Canada. The problems which have arisen in Alaska with the construction of the Alyeska Pipeline have been attributed, in a large measure, to the in-migration of Americans attracted by the prospect of high wages in the construction activities associated with building the pipeline and related facilities. This phenomena has been encouraged in Alaska by the presence of union hiring halls - the sole means of entry to pipeline jobs - within the State of Alaska.

Witnesses before the Inquiry have almost universally recognized the necessity of discouraging southern Canadians migrating North in search of project employment. An influx of southern transients would place unbearable pressures on Northern communities.



- b) The definition of "Permanent Northern Resident" and "Northern Resident" is used to identify the clients of the Northern Manpower Delivery System. This service administers a preference for Permanent Northern Residents to obtain project employment and training. This preference is a recognition that many persons, particularly natives, living in the Northwest Territories are at a distinct disadvantage to other Canadians in competing for jobs created by the construction of a pipeline in the North.

We have selected ten years as the length of northern residency necessary to be defined a Permanent Northern Resident as we believe this identifies those persons, who, for reasons of culture, history and geography, are not presently in a position to qualify for many of the jobs to be offered during the construction phase of the project.

#### NORTHERN EMPLOYMENT AND TRAINING PREFERENCE SYSTEM

10. THE NORTHERN EMPLOYMENT AND TRAINING PREFERENCE SYSTEM SHALL BE ADMINISTERED AND MONITORED BY THE NORTHERN MANPOWER DELIVERY SYSTEM. COMPLIANCE AND ENFORCEMENT OF ANY PROVISIONS SHALL BE VESTED WITH APPROPRIATE GOVERNMENT AUTHORITY OVERSEEING THE PROJECT TERMS AND CONDITIONS.

NMDS is the agency charged with administering the preference system and monitoring compliance and performance of the employment terms and conditions. NMDS refers violations to the proposed Authority for compliance, enforcement and penalization since that latter agency, not the NMDS has those powers for the project.



PERMANENT NORTHERN RESIDENTS

11. PERMANENT NORTHERN RESIDENTS SHALL BE EXTENDED PRIORITY OPPORTUNITY TO PARTICIPATE IN EMPLOYMENT AND TRAINING POSITIONS FOR WHICH THEY ARE DEEMED TO QUALIFY. QUALIFIED PERMANENT AND NORTHERN RESIDENTS SHALL BE GRANTED RELEVANT UNION MEMBERSHIP AND DISPATCHED TO EMPLOYMENT OR TRAINING ON A SIMILAR PRIORITY BASIS.
12. UNION DISPATCHERS SHALL ACCEPT OR REJECT THE PERMANENT NORTHERN RESIDENT REFERRED BY THE NMDS. IF THE UNION DISPATCHER ACCEPTS THE PERMANENT NORTHERN RESIDENT FOR DISPATCH, HE SHALL NOTIFY THE CONTRACTOR AND HE SHALL DISPATCH THE PERSON THROUGH THE NMDS. IF THE UNION DISPATCHER REJECTS THE PERMANENT NORTHERN RESIDENT, HE SHALL INDICATE HIS REJECTION TO THE NMDS.
13. THE UNION SHALL BE REQUIRED TO SHOW SUFFICIENT CAUSE TO THE AUTHORITY WHY THE PERMANENT NORTHERN RESIDENT REFERRED TO IT BY THE NMDS WAS REJECTED. IF THE UNION FAILS TO SHOW SUFFICIENT CAUSE, IT SHALL BE REQUIRED TO PAY:
  - a) THE AMOUNT OF MONEY THE REJECTED PERSON WOULD HAVE EARNED AT THE REFUSED POSITION FROM THE DATE OF THE REFUSAL TO THE DATE THAT PERSON IS DISPATCHED BY THE UNION, OR;





- b) THE AMOUNT OF MONEY THE REJECTED PERSON WOULD HAVE EARNED AT THE POSITION REFUSED FOR ONE COMPLETE TOUR OF EMPLOYMENT,

WHICHEVER IS THE LESSER.

- 14. IF THE CONTRACTOR REFUSES TO ACCEPT A PERMANENT NORTHERN RESIDENT DISPATCHED BY A UNION, THE CONTRACTOR SHALL BE REQUIRED TO SHOW SUFFICIENT CAUSE WHY THAT PERSON WAS REJECTED. IF THE CONTRACTOR FAILS TO SHOW SUFFICIENT CAUSE, IT SHALL BE REQUIRED TO PAY:

- a) THE AMOUNT OF MONEY THE REJECTED PERSON WOULD HAVE EARNED AT THE REFUSED POSITION FROM THE DATE OF THE REFUSAL TO THE DATE THAT PERSON IS ACCEPTED BY THE CONTRACTOR, OR;
- b) THE AMOUNT OF MONEY THE REJECTED PERSON WOULD HAVE EARNED AT THE REFUSED POSITION FOR ONE COMPLETE TOUR OF EMPLOYMENT,

WHICHEVER IS THE LESSER.

FOR THE PURPOSE OF 13 a) AND 14 a), IF THE PERSON IS HIRED OR DISPATCHED AT A RATE OF PAY LESS THAN THE RATE OF PAY FOR THE POSITION REFUSED BY THE UNION OR COMPANY, AS THE CASE MAY BE, THE UNION OR THE COMPANY SHALL PAY THE DIFFERENCE IN THE TWO RATES CALCULATED FOR ONE FULL TERM. SUCH PAYMENT IS IN ADDITION TO THE AMOUNTS SET OUT IN 13 a) AND 14 a).



## NORTHERN RESIDENTS

15. THE NMDS SHALL REFER ALL QUALIFIED NORTHERN RESIDENTS TO APPROPRIATE UNIONS. THESE NORTHERN RESIDENTS SHALL BE LISTED WITH THE UNIONS AND SHALL BE PREFERRED FOR DISPATCH BY THE UNIONS. NORTHERN RESIDENTS SHALL BE DISPATCHED BY THE UNIONS IF:
- a) THE NMDS HAS NOT REFERRED A PERMANENT NORTHERN RESIDENT FOR DISPATCH, OR;
  - b) THE UNION HAS REJECTED THE PERMANENT NORTHERN RESIDENT REFERRED BY THE NMDS.
16. THE COMPLIANCE PROVISION SET OUT IN PARAGRAPH 13 AND 14 SHALL APPLY IN THE SAME MANNER TO THE NORTHERN RESIDENT.

For the purpose of employment and on-the-job training positions, the Northern Resident is referred to the appropriate Union. The qualified Northern Resident is to be dispatched by that Union before any southern members and only after it has been determined that a qualified Permanent Northern Resident is not available. The Northern Resident, however, is afforded a higher degree of priority than a southern member.

Thus, the facilities and apparatus of the NMDS may be used by Northern Residents to facilitate access on a preferential basis, to pipeline employment without the requirement that the Northern Resident attend at a southern hiring hall.

The Union may use the facilities of the NMDS to dispatch the Northern Resident.



## ROLE AND FUNCTIONS OF THE NORTHERN MANPOWER DELIVERY SYSTEM

17. AN INDEPENDENT AND SEPARATE AGENCY SHALL BE ESTABLISHED WITH THE SOLE RESPONSIBILITY OF FACILITATING ACCESS TO EMPLOYMENT AND TRAINING FOR "PERMANENT NORTHERN RESIDENTS" AND OTHER "NORTHERN RESIDENTS" TO ALL PROJECT RELATED EMPLOYMENT AND TO TRAINING POSITIONS.
18. THE NORTHERN MANPOWER DELIVERY SYSTEM SHALL BE THE EXCLUSIVE ORGANIZATION REFERRING RESIDENTS TO PROJECT EMPLOYMENT AND TRAINING OPPORTUNITIES DURING PIPELINE AND RELATED GAS INDUSTRY CONSTRUCTION ACTIVITIES.

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A multitude of agencies, as existed in Alaska, create confusion with the clients they attempt to serve and among unions and contractors. Numerous agencies also tend to develop overlapping jurisdictions. This creates the risk that the various agencies find themselves working at cross purposes.

The NMDS should have a separate status. It would not be effective as a cooperative inter-agency committee. Therefore, a separate agency will have a clearly defined role to fulfill as well as an exclusive jurisdiction, giving it a single purpose undiluted by competing interests and objectives inherent in the operations of a cooperative inter-agency or committee structure.

The NMDS should have exclusive jurisdiction over referral of Residents to employment and training opportunities for the project as previously defined. Also, the MNDS should have exclusive responsibility for monitoring compliance with these employment and training terms and conditions for a construction permit. The NMDS should cease operations as a separate agency upon the completion of a pipeline construction, the completion of gas plant construction whichever last occurs.

After termination of operations of the NMDS, the participant agencies and interest groups should recommend to government and other agencies about the form, responsibility and functioning of on-going manpower delivery responsibilities. Presumably, the Government of the Northwest Territories and Canada Manpower will assume their respective on-going roles. An NMDS is necessary, in the interim, in order that appropriate and delegated powers can be suitably vested, and to properly carry out the terms and conditions placed on the permit. This is not possible within the present jurisdictional situation.





19. THE NORTHERN MANPOWER DELIVERY SYSTEM SHALL HAVE THE FOLLOWING FUNCTIONS:

- a) TO UNDERTAKE AND COORDINATE INFORMATION DISSEMINATION TO COMMUNITIES REGARDING PROJECT EMPLOYMENT AND TRAINING OPPORTUNITIES;
- b) TO INITIATE, COORDINATE, AND ESTABLISH PROJECT ORIENTATION PROGRAMMES AT THE COMMUNITY AND REGIONAL LEVELS;
- c) TO GATHER, SCREEN, PROCESS AND EVALUATE APPLICATIONS FROM RESIDENTS FOR PROJECT EMPLOYMENT AND TRAINING, AND TO REFER SUCH APPLICATIONS TO UNIONS AND/OR TRAINING PROGRAMMES;
- d) TO REGISTER AND CLEAR "PERMANENT NORTHERN RESIDENTS" AND "NORTHERN RESIDENTS" FOR REFERRAL TO UNION LOCALS IN SOUTHERN CANADA AND TO ASSIST UNIONS IN DISPATCHING NORTHERN RESIDENTS;
- e) TO ESTABLISH, STAFF, AND OPERATE A CENTRAL NMDS OFFICE AND SUCH OTHER SERVICES AS MAY BE REQUIRED IN COMMUNITIES TO PERFORM THESE FUNCTIONS. EXISTING AGENCY SERVICES IN COMMUNITIES WOULD BE UTILIZED TO THE MAXIMUM EXTENT POSSIBLE;
- f) TO ASSESS SKILLS AND EVALUATE EXPERIENCE OF ALL NORTHERN RESIDENT APPLICANTS IN ORDER TO DETERMINE APPROPRIATE LEVEL;
- g) TO ENSURE THE PROVISION OF SUCH OTHER SERVICES AS MAY BE NECESSARY TO CARRY OUT THESE TERMS AND CONDITIONS OF ENTRY INTO A TRADE, EMPLOYMENT OR TRAINING SITUATION;
- h) TO PRESCRIBE THE PRE- EMPLOYMENT TRAINING NECESSARY TO MEET THE SKILL DEFICIENCIES OF ITS CLIENTS AND TO BE RESPONSIBLE TO ENSURE THE INITIATION OF SUCH TRAINING BY THE OWNERS;
- i) TO BE RESPONSIBLE FOR THE ACQUISITION OF SUCH SUPPORT SERVICES AS MAY BE NECESSARY TO ASSIST CLIENTS OF THE NMDS;



- j) TO ASSEMBLE DATA AND MONITOR PERFORMANCE OF TERMS AND CONDITIONS RELATING TO EMPLOYMENT, TRAINING AND MANPOWER DELIVERY.

The NMDS is the vehicle that would be utilized to achieve resident employment and training participation in the project. Due to the complexity of the terms and conditions, and the need to monitor performance and facilitate Northern manpower delivery and training, it is clear that such an agency must be established. Although the apparent form and functioning of NMDS appears cumbersome and perhaps overly bureaucratic, this need not be the case if the staff and board of directors are given powers to modify the structure and role of the NMDS. We must remember that NMDS should have a built-in 'self-destruct' feature, which would terminate its responsibilities upon completion of the most labour intensive parts of the project (i.e. pipeline, station and plant construction) with NMDS functions reverting back to agencies having responsibility for these functions in the absence of the project.

We must also build into the planning of an NMDS, a mechanism for maximum utilization of existing agency services such as community labour pool offices, Government of the Northwest Territories' employment and training services and Canada Manpower Centres, where these agencies choose to opt-in to help NMDS. However, NMDS should not drain other agencies' resources and ability to perform their normal functions. This is another rationale for a separate NMDS - i.e. resources of the existing agencies should not be exclusively directed to the project.

It should be clear at this stage that the NMDS is an information dissemination, referral and monitoring service only. It is not responsible for operating training programs. However, it must assure that necessary training programs are initiated. As will be discussed elsewhere, this training should be the responsibility of the owners.

The NMDS should also be responsible for the provision and acquisition of such other services necessary to carry out its functions.

The responsibilities of the NMDS arise out of the practical exigencies inherent in ensuring the implementation of schemes and programs that maximize training and employment opportunities for its clients on the project.

The ability of the NMDS to respond to its responsibilities should not be restricted by a rigid set of operating procedures. However, to ensure the NMDS may prove effective in its work, certain specific requirements must be placed on the owners,



contractors, unions and the system itself.

Even these requirements should not be inviolable. The NMDS, being composed of all the varied interests, should be capable of modifying or altering specific terms and conditions as the need requires.





## THE STRUCTURE OF THE NORTHERN MANPOWER DELIVERY SYSTEM

20. THERE SHALL BE A NORTHERN MANPOWER DELIVERY SYSTEM POLICY BOARD WHICH FUNCTIONS LIKE A BOARD OF DIRECTORS. THE POLICY BOARD SHALL BE COMPOSED OF REPRESENTATIVES OF THE FOLLOWING GROUPS:

NATIVE ORGANIZATIONS, UNIONS, OWNERS OF CONTRACTORS, AND GOVERNMENT AGENCIES. ITS JOB WILL BE AS FOLLOWS:

- a) TO SET OVERALL POLICY;
- b) TO PROVIDE DIRECTION TO AN EXECUTIVE COMMITTEE.

The NMDS requires the active assistance and cooperation of the owner, native organizations, unions, contractors and government departments. Each group has an important contribution to make to the agency and an equally important stake in its policies and operations.

No single groups should control the agency and all should have a say in its policy.

The Policy Board should meet periodically on a regular basis. A suggested composition of the Policy Board is as follows:

<u>Representatives</u>	<u>No. of Reps.</u>
Indian Brotherhood of the Northwest Territories (IBNWT)	1
Metis Association of the Northwest Territories (MANWT)	1
Inuit - Taparizat of Canada (ITC)	1
Committee for Original Peoples Entitlement (COPE)	1
Council of Yukon Indians (CYI)	1
Owner (Pipeline)	1
Owner (Gas Producers representative(s))	1
Contractors (Prime Management Contractor and execution contractors)	3
B.C. & Yukon Territory Building and Construction Trades	1



Alberta & NWT Building and Construction Trades	1
(2 to be selected from the 4 pipeline unions)	
GNWT - Department of Economic Development	1
GNWT - Department of Education	1
Canada Manpower	1
Department of Indian & Northern Affairs	<u>1</u>
Total	19

21. THERE SHOULD BE A CHAIRMAN OF THE POLICY BOARD SELECTED BY HIS COLLEAGUES BY A MAJORITY VOTE, RECEIVING AT LEAST ONE VOTE FROM EACH OF THE FOUR MAJOR INTEREST GROUPS REPRESENTED ON THE POLICY BOARD.
22. EACH ORGANIZATION REPRESENTED ON THE POLICY BOARD SHALL APPOINT A REPRESENTATIVE AND AN ALTERNATE WHO SHALL HAVE FULL VOICE AND VOTING RIGHTS WHEN ALTERNATING WITH THE REGULAR REPRESENTATIVE.
23. THERE SHALL BE AN EXECUTIVE COMMITTEE COMPOSED OF THE FOLLOWING:

<u>Representatives</u>	<u>No. of Reps.</u>
Inuit-Tapisat of Canada and COPE	1
Indian Brotherhood of the Northwest Territories	1
Metis Association of the Northwest Territories	1
Federal and Territorial Governments	1
Owners & Contractors	1
Unions	<u>1</u>
Total	6



THE CHAIRMAN OF THE POLICY BOARD SHALL ALSO BE THE CHAIRMAN OF THE EXECUTIVE COMMITTEE. THE EXECUTIVE COMMITTEE SHALL HAVE THE RESPONSIBILITY OF HIRING AN EXECUTIVE DIRECTOR CHARGED WITH THE RESPONSIBILITY OF THE DAY-TO-DAY OPERATIONS OF THE NMDS.

24. THE DEPARTMENT OF INDIAN AND NORTHERN AFFAIRS' REPRESENTATIVE AND THE OWNER REPRESENTATIVE SHALL BE NAMED FORTHWITH AFTER THE RIGHT-OF-WAY PERMIT IS GRANTED AND SHALL HAVE THE RESPONSIBILITY OF CONTACTING THE OTHER ORGANIZATIONS TO DETERMINE THEIR REPRESENTATIVE. THEY SHALL HAVE THE RESPONSIBILITY OF SETTING THE FIRST POLICY BOARD MEETING WHICH SHALL TAKE PLACE WITHIN ONE MONTH OF THE DATE OF THE PERMIT.

The Executive Committee should meet more frequently than the Policy Board and should direct its attention to ensuring the smooth functioning of the NMDS, especially in its relationship with the various Native organizations, unions, contractors, and government departments and programmes.

The Policy Board should also be vested with powers to modify the functioning and representation of the NMDS as situations or circumstances warrant in order to achieve more effective and efficient performance of the NMDS. The size of target clientele for the NMDS does not likely warrant the establishment of an elaborate mechanism for delivery of manpower and the NMDS should be flexible with respect to size, complexity, etc.

25. THE POLICY BOARD SHALL HAVE THE POWER TO DELEGATE ALL OR PART OF ITS AUTHORITY TO THE EXECUTIVE COMMITTEE.





IMPLEMENTATION AND OPERATION OF A NORTHERN MANPOWER  
DELIVERY SYSTEM

26. PLANNING FOR OPERATIONS OF SUCH AN NMDS SHOULD BE INITIATED TWO YEARS PRIOR TO CONSTRUCTION STARTUP. FIRST YEAR PLANNING SHOULD INCLUDE:

- a) SETTING UP AND CONVENING THE POLICY BOARD AND THE EXECUTIVE COMMITTEE AND HIRING AN EXECUTIVE DIRECTOR OR MANAGER;
- b) RECRUITING OF STAFF;
- c) ACQUIRING AND ESTABLISHING A CENTRAL OFFICE, PHYSICAL FACILITIES AND EQUIPMENT;
- d) SETTING UP AN INFORMATION BANK AND RETRIEVAL SYSTEM DRAWING UPON THE TERIS SYSTEM AND OTHER LABOUR FORCE INFORMATION SOURCES WITH THE VARIOUS GOVERNMENT AGENCIES. COORDINATING ALL THESE INTO AN INFORMATION BANK AND RETRIEVAL SYSTEM WHICH IDENTIFIES THE CLIENTELE INDIVIDUALLY AND CATALOGUES THEIR SKILLS, EXPERIENCE, EDUCATIONS AND SO ON.
- e) ESTABLISHING A COMMUNICATIONS SYSTEM IN THE COMMUNITIES CONNECTED TO THE CENTRAL OFFICE AND OTHER TERMINALS.

27. SECOND YEAR PLANNING SHOULD INCLUDE:

- a) INITIAL INFORMATION DISSEMINATION TO COMMUNITIES:
- b) ASSEMBLY AND STORAGE OF PERTINENT LABOUR FORCE DATA AND ACQUISITION OF LABOUR REQUIREMENTS DATA FROM CONTRACTORS AND/OR OWNERS.

28. AT LEAST ONE YEAR PRIOR TO THE COMMENCEMENT OF CONSTRUCTIONS THE OWNER SHALL BE REQUIRED TO PROVIDE THE NMDS WITH A DETAILED BREAKDOWN OF THE WORK FORCE REQUIRED FOR THE CONSTRUCTION OF THE PROJECT FACILITIES. THIS INFORMATION SHALL INCLUDE:



- a) THE PROJECTED STARTING DATE OF EVERY EMPLOYMENT AND ON-THE-JOB TRAINING POSITION AND ITS PROJECTED DURATION;
- b) THE SKILL REQUIREMENTS, IN DETAIL, OF EVERY EMPLOYMENT AND TRAINING POSITION;
- c) THE LOCATION OF EVERY SUCH EMPLOYMENT AND TRAINING POSITION;
- d) SUCH OTHER INFORMATION AS REQUIRED BY THE NMDS.

It will take approximately one year to set up the NMDS and begin operations. It will then take approximately one year of pilot operation before actual construction could begin. Thus, a minimum of two years is required between the granting of the Right-of-Way permit and the commencement of construction. Thus, there must be a full twelve-month period between supplying of job and training information in a form satisfactory to the NMDS and if the contractor fails to provide that information twelve months before his start-up date, the contractor will not be permitted to commence construction until a full twelve months has run from the time he supplied the required information.

Generally the system having been set up in the first year would initiate the various functions of information dissemination, skill assessment, recruitment, counselling and dispatching to training programs. It may be necessary to commence some training programmes as early as possible in the first year so that the trainee may acquire sufficient skills to permit dispatch to pipeline construction jobs at the outset of the project.

Before a northern resident may be referred to a training programme by the NMDS, that person must be identified, his job experience and skills must be assessed and he must be provided with information and counselled on job and training opportunities available. In the normal course, these functions will take place once the NMDS is set up and the functions are comprehensively planned.

However, in order to commence longer term training programmes prior to the commencement of pipeline construction it may be necessary to organize a special programme at an early stage. This programme would be



established to pinpoint and identify permanent northern residents who are prospective candidates for the longer training programmes. This programme would go through the various steps of evaluating and assessing these prospective trainees and arranging their referral to training programmes while the main NMDS organization is still being planned and established in the year from the date of the Right-of-Way permit.

29. AT LEAST THIRTY DAYS PRIOR TO THE COMMENCEMENT OF ALL EMPLOYMENT AND ON-THE-JOB TRAINING POSITIONS EACH SEASON, EVERY CONTRACTOR AND SUB-CONTRACTOR SHALL NOTIFY THE NMDS OF THE EMPLOYMENT POSITIONS AVAILABLE. THIS INFORMATION SHALL INCLUDE:

- a) THE PROJECTED STARTING DATE OF EVERY EMPLOYMENT POSITION AND ITS PROJECTED DURATION;
- b) THE CLASSIFICATION OF THE EMPLOYMENT POSITION;
- c) THE LOCATION;
- d) SUCH OTHER INFORMATION AS REQUIRED BY THE NMDS.

30. EVERY CONTRACTOR AND SUB-CONTRACTOR SHALL NOTIFY THE CENTRAL OFFICE OF THE NMDS OF ALL JOB REQUESTS MADE TO THE UNION HIRING HALLS. SUCH NOTIFICATION SHALL TAKE PLACE AT THE TIME THE JOB REQUESTS ARE MADE. THIS INCLUDES ALL NAMES REQUESTS. NOTIFICATION TO THE NMDS SHALL INCLUDE THE FOLLOWING INFORMATION:

- a) THE JOB DURATION;
- b) THE JOB CLASSIFICATION;
- c) THE JOB LOCATION;
- d) SUCH OTHER INFORMATION AS REQUIRED BY THE NMDS.

FAILURE OF THE CONTRACTOR OR SUB-CONTRACTOR TO NOTIFY THE NMDS SHALL RESULT IN A PENALTY CALCULATED AS THE RATE OF PAY FOR EACH JOB POSITION FOR WHICH THE NMDS





WAS NOT NOTIFIED, CALCULATED OVER ONE COMPLETE TERM OF EMPLOYMENT.

THE NMDS SHALL HAVE FORTY-EIGHT HOURS TO REFER A PERMANENT NORTHERN RESIDENT TO THE APPROPRIATE UNION HIRING HALL. IF THE NMDS DOES NOT REFER A PERMANENT NORTHERN RESIDENT TO THE UNION WITHIN FORTY-EIGHT HOURS FROM THE TIME THE NOTIFICATION IS RECEIVED FROM THE CONTRACTOR, THE UNION MAY DISPATCH A MEMBER IN THE NORMAL WAY, BUT PREFERRING THE NORTHERN RESIDENT.

31. THE MINIMUM TIME LIMITS AS SET OUT IN RECOMMENDATIONS 26, 27 and 28 HEREIN ARE MANDATORY WITH TIME EXTENSION PROVISIONS BEING GRANTED IN WARRANTED CIRCUMSTANCES AND UPON PRIOR CLEARANCE WITH THE NMDS. NO EMPLOYMENT OR ON-THE-JOB TRAINING POSITIONS MAY BE FILLED BY ANY EMPLOYEE UNLESS THE TIME REQUIREMENTS HAVE BEEN MET.

THE REQUIREMENTS SET OUT HEREIN SHALL APPLY TO ALL EMPLOYMENT AND ON-THE-JOB TRAINING POSITIONS OF THE OWNERS AND ALL CONTRACTORS AND SUB-CONTRACTORS, INCLUDING ALL CLERICAL, TECHNICAL, MANAGERIAL, AND OTHER STAFF EMPLOYMENT POSITIONS LOCATED IN THE NORTHWEST TERRITORIES.

There has been much criticism of the quota system from the Pipeline Applicants, the Unions and Government witnesses. The quota system is most famous or infamous in Alaska.

This system requires a specific number of persons from a preferred group required to be employed in the labour force, or it fixes a specific percentage of the labour force required to be composed of persons from a preferred group. The fixed number or percentage is recognized as a goal to be reached and is conceived as an objectives system applied to employment opportunities. It creates a frame of reference to determine if performance is satisfactory. This system permits a method of measurement which allows an



employer or union to demonstrate its effort and good faith. It serves as proof of achievement if the goal is reached.

The quota system has been severely criticized for a number of reasons. It runs the risk of creating a "numbers game" where the employer or union oblige by simply hiring or dispatching a number of persons to comply with the quota requirements. This allegedly is motivated by no other purpose or intention than to fill the ranks. This "number game" in turn provides no long term assistance to the person concerned. He is paid a salary but is not provided with an opportunity to acquire or improve his skills. In many instances he may be discouraged from working. It is alleged that he tends to acquire bad work habits and an unrealistic view of wage employment.

The goal or quota system requires a fairly precise evaluation of the target group and the skills of the individuals within the target group. It also requires a determination be made of the attitude and desires of the individuals within the target group to seek or select wage employment on the project.

The preference system, recommended by John Elwood of Foothills Pipelines Limited, suggests that all employment positions are open to members of the preferred group on a first preference basis. The only prerequisite is that the individual member or members of the preferred or target group, who are put forward as candidates for employment positions, are prima facie qualified to fill the positions. Very simply, one is matching qualified workers to job openings on a preferred basis.

The preference system envisaged in these terms and conditions effectively gives rights of first refusal for all employment on-the-job, pre-job, and special institutional training to the Permanent Northern residents who are qualified for entry into these slots. Where qualified "Permanent Northern Residents" are not available, such positions would be offered to "Northern Residents" and finally non-residents. The NMDS would be the agency responsible for referring its clients to positions.

32. IN OPERATING A PREFERENCE REFERRAL SYSTEM, THE NMDS SHALL UTILIZE EXISTING COMMUNITY EMPLOYMENT AND LABOUR POOL



SERVICES WHEREVER FEASIBLE AND UPON THE CONSENT OF SUCH EXISTING SERVICES.

33. UPON REQUESTS OF GROUPS OF WORKERS IN COMMUNITIES; THE NMDS SHALL NEGOTIATE THE NECESSARY UNION CLEARANCES AND CONTRACTOR APPROVALS FOR DISPATCH OF THESE WORKERS ON A LABOUR POOL BASIS.

These requirements respond to two existing needs. First, existing employment service organizations in communities may wish to act as the local NMDS office even though their present and future responsibilities embrace more than project related employment. Second, the NMDS must be structured and operate in such a way as to facilitate the participation of community labour pools in project employment. A labour pool is an effective vehicle for the following:

- a) employment of native people in sub-projects such as right-of-way clearing, site clearing, and post-construction clean-up;
- b) control of labour attrition in sub-projects because local people are working with their peers in reasonable proximity to their home community;
- c) control of labour attrition due to nature of pool system (operated on buddy system replacement basis);
- d) community control on work force participation (ie. insuring against 'skill drain' from community); and
- e) flexibility of work time and tenure so that individuals can opt-in or opt-out of the work force depending on interest in hunting, trapping or fishing, family or community commitments.

Disadvantages of the labour pool system include:

- a) must be limited to low-skill, high-labour intensive applications due to the replacement aspect;





- b) limited opportunity for training more specialized skills;
- c) participation is limited by the availability of sub-projects such as line clearing, clean-up operations in vicinity of community; and
- d) difficulty in coordination of dispatch through the three main unions -- operating engineers, teamsters and labourers.

The labour pool office acts as a dispatch office and participants in the pool have a say in the organization and operation of the pool.

34. THE NMDS SHALL ENSURE THAT PERMANENT NORTHERN RESIDENTS REFERRED TO EMPLOYMENT AND ON-THE-JOB TRAINING SITUATIONS ARE DISPATCHED TO THE SAME WORK LOCATION OR TRAINING SITUATION TO THE MAXIMUM EXTENT POSSIBLE.

In his evidence Mr. Bergasse indicated that a high proportion of native people on a work crew was a significant factor in maximizing retention rates. He stated that where 30% of the work crew was composed of native persons the retention factor was extremely good. One of the main reasons for the success of Hire North was the large proportion of native persons on the work crew and the sense of comradry and identity that was created. It provided a comfortable atmosphere in which the native person was able to work.

Conversely, where a native person finds himself isolated on a crew composed of a high proportion of non-native people, he may have difficulty coping with the situation and may feel uncomfortable working with people, whose life, views and world experience are totally different to his.

In referring its clientele to work in training situations the NMDS should recognize that the most effective way of retaining natives on the project work force is to assure they are assigned to work crews composed of a substantial proportion of persons from the same community. Likewise this is an important criteria in assigning native persons to training positions.

Another important consideration for the NMDS in referring



its clients to employment and training positions, is that client's ability to understand and communicate in the english language. The NMDS may have a number of clients who have difficulty working in an integrated crew and taking instructions from non-native foremen because of their inability to understand the foreman or their fellow workmen to be understood in turn. Professor Hobart's evidence indicated that in Coppermine, Gulf Oil established all native crews for natives who did not meet minimum english requirements. However, these crews lived and worked in integrated camp settings. .

This raises an important factor to be considered when the NMDS assesses its clientele. A determination should be made of that person's level of understanding and ability to communicate in the english language. In this way one is assisted in determining the appropriate orientation instruction, training and work crew assignment for each NMDS client.



INFORMATION DISSEMINATION TO COMMUNITIES REGARDING  
EMPLOYMENT AND TRAINING OPPORTUNITIES - EMPLOYMENT  
COUNSELLING AND ORIENTATION

35. THE NMDS SHALL ESTABLISH AN EXTENSIVE INFORMATION PROGRAM AT THE COMMUNITY LEVEL. THIS PROGRAM SHALL DETAIL THE PIPELINE EMPLOYMENT AND TRAINING OPPORTUNITIES TO BE MADE AVAILABLE TO THE PERMANENT NORTHERN RESIDENT.

This program should commence at an early stage and should continue throughout the construction period on an information request basis to be provided by the NMDS representative in the community.

As part of this program the owners, unions and contractors should provide the NMDS with a trades and union education program. Many Permanent Northern Residents may have scant understanding of the role and function of Unions, the scope of work of particular trades, member responsibilities and certain general knowledge items which are usually taken for granted.

As a result of this program it is hoped numerous problems created by a lack of understanding may be avoided. In order to increase the level of understanding among Permanent Northern Residents about trade unions and pipeline employment, the following questions should be addressed:

- a) What is a Union?
- b) Why must an individual join a Union in order to obtain employment on the construction of the project?
- c) What Unions will be involved in construction of the project?
- d) What are the trades represented by each Union?
- e) How does an individual become a Union member?
- f) Why is it necessary to join a Union which is based in Edmonton or Vancouver?





- g) What in general are the members' responsibilities to the Union?
- h) What benefits does Union membership provide?
- i) What "trade" training programs are available for unskilled northern residents?
- j) What is an apprenticeship or training program?
- k) In general what are the requirements of these training programs?
- l) What is a journeyman?
- m) How is an individual's previous experience evaluated?
- n) How is an individual hired for a job?
- o) How is an individual transported from his home to the job site and back again when the job is finished? Who pays the transportation costs? When may a Permanent Northern Resident leave the job site? What are the consequences of leaving prior to the end of the normal term of employment? What is a normal work term? What is a rest and recreation period? How does a person make himself eligible to return to pipeline work or training?
- p) Is there special equipment, tools, or clothing which an individual must bring along to the job site?
- q) If a job is finished, how does an individual let his Union know he is available for future work?
- r) How can an individual withdraw from his Union and still maintain his membership?
- s) What lodging, recreation, food and other camp conditions may an employee expect on the job site? What system of communication will exist between the camps and the communities?
- t) How does the Northern Manpower Delivery



### Service function?

- u) What is a Permanent Northern Resident and Northern Resident?

The program of job, union and training education information dissemination is a process that should be carried out by the NMDS community representative in each community. It is an ongoing process coupled with orientation activities associated with preparing Permanent Northern Residents for employment on the project.

It is impractical to separate the function of information dissemination from the function of orientation and counselling as far as preparing persons for employment is concerned.

It is important that NMDS community representative be instructed and trained in the proper performance of these functions. The community representative should also have access to resources that can help him in the performance of these duties. These resources should be made available by the NMDS.



## APPLICATION FOR PROJECT EMPLOYMENT AND TRAINING

36. THE NMDS COMMUNITY REPRESENTATIVE SHALL BE THE PERSON RESPONSIBLE TO TAKE THE APPLICATION OF A PERMANENT NORTHERN RESIDENT OR NORTHERN RESIDENT FOR PROJECT EMPLOYMENT OR TRAINING.

The community representative should obtain sufficient information from the Applicant to determine:

- a) If the Applicant qualifies as a Permanent Northern Resident or a Northern Resident.
- b) Educational level of the Applicant.
- c) The skilled training of the Applicant.
- d) The history of the Applicant's job experience focusing on his or her skills and possible union membership.
- e) Employment aspiration of the Applicant.
- f) Such other factors as deemed necessary by the NMDS.

This process of taking applications is not a skill assessment. Rather, it is an information gathering process to properly identify an NMDS client and to provide certain information to assist in the skill assessment process.

The community representative himself would not generally make any determination with regard to a person's skill level.

All inquiries to the Department of Manpower and Immigration, the Territorial Government and any other government employment service or agency concerning project employment or training must be referred to the local NMDS community representative.

The NMDS community representative would then relay all the information obtained from the Applicant to the central office of the NMDS.





## SKILL ASSESSMENT

37. THE NMDS SHALL ASSUME RESPONSIBILITY FOR PRELIMINARY ASSESSMENT OF SKILLS AND EXPERIENCE OF INDIVIDUALS SEEKING ENTRY INTO TRAINING AND EMPLOYMENT ASSOCIATED WITH THE PROJECT. THIS ASSESSMENT WOULD CONSIST OF:

- a) EVALUATION OF APPLICANTS' EXPERIENCE AND REFERRAL TO APPROPRIATE TRAINING, LEVEL OF APPRENTICESHIP OR TO JOURNEYMAN LEVEL FOR PROJECT EMPLOYMENT.
- b) PRESCRIPTION OF UP-GRADING OR TRAINING PROGRAMMES FOR INDIVIDUALS SEEKING ENTRY INTO OR PROGRESSION WITHIN A TRADE.

38. THE INDIVIDUAL ASSESSED, THE OWNERS OF THEIR DESIGNEE, AND THE APPROPRIATE UNION SHALL BE INFORMED OF THE ASSESSMENT MADE AND SHALL HAVE THE RIGHT TO REQUIRE THE EXECUTIVE COMMITTEE OR ITS APPOINTEE TO REVIEW THE ASSESSMENT.

The NMDS should have a small roster of experts to assess skills and determine experience equivalency. It is vital these experts appreciate the importance of assuring that Permanent Northern Residents are able to perform in the job categories in which they are placed. The expert or roster of experts may be able to look at the job applications completed by the NMDS community representative and to make a determination of the individual skills from that application. However, in some cases they may not be able to make such a determination upon the information provided in the application.

An expert or a group from this roster of experts would then travel into the communities and sit down with the community representative and with the individual applicant for the purpose of determining that person's skill level.

It is important the expert and the community representative appreciate the purpose of the skill assessment is to determine the experience equivalency of the applicant and place him in the highest possible category of skill assessment, consistent with the applicant's work experience.



It is also important the expert understand his decision will have important ramifications for the individual applicant. If the skill assessment has the effect of overestimating the applicant's work experience and the skill level, the individual will have difficulty coping with his job and will prove to be unacceptable to his Union, the contractor and his fellow employees. The system of skill assessment will break down if the Unions and contractors find that Permanent Northern Residents referred through the NMDS lack sufficient skills to function in the category which they have been placed by the assessment process. A balance must be struck between the objective of putting the Permanent Northern Resident in a skill category that maximises his abilities and the recognition that there is a danger in overestimating the individual's experience equivalency. The lesson from Alaska clearly demonstrates that a person who is unable to function in a position for lack of skill, training and experience will not remain long on the job site.



FACILITIES, PERSONNEL AND ADMINISTRATION OF THE NMDS

39. THE NMDS SHALL ESTABLISH A CENTRALLY LOCATED OFFICE IN THE NORTH (PRESUMABLY IN YELLOWKNIFE) AND SHALL HAVE AT LEAST ONE OFFICER OR REPRESENTATIVE IN EACH OF THE COMMUNITIES DESIGNATED TO BE SERVED BY NMDS.

It should be the function of the NMDS to determine which communities would be designated for coverage. Designation could be in response to community wishes as expressed by that community and may include communities beyond the Mackenzie Valley and Northern Yukon.

Those communities so designated will have access to all the services provided by the NMDS, Each community so designated will have an officer designated by the NMDS and responsible to the NMDS for carrying out the various functions to be performed in that community.

The various NMDS's functions to be carried out in a community would only take place after than community had been given an opportunity to express its views on how these various functions should be carried out.

40. WHERE FEASIBLE, A TELEX SYSTEM SHALL BE INSTALLED, CONNECTING EACH COMMUNITY IN WHICH THE NMDS OPERATES; THE CENTRAL OFFICE OF THE NMDS, ALL TRAINING INSTITUTIONS IN THE NORTH, ALL CONSTRUCTION CAMPS, ALL UNION HIRING HALLS IN THE SOUTH, THE ADMINISTRATIVE OFFICE OF THE OWNER, THE ADMINISTRATIVE OFFICES OF THE CONTRACTORS.

Rapid, accurate and dependable communications are a necessary prerequisite to the efficient operation of the NMDS. There should be a back-up system of telephones connecting all of these various communication points. Transmitting and acquiring information has been a very difficult problem in Alaska, hampering the access of rural Alaskans to construction employment on the Alyeska project.

41. A CENTRAL INFORMATION STORAGE AND RETRIEVAL SYSTEM SHALL BE ESTABLISHED AND OPERATED BY THE NMDS. THIS INFORMATION STORAGE AND RETRIEVAL SYSTEM MUST BE PROGRAMMED AS SOON AS POSSIBLE FROM THE DATE OF THE GRANTING OF THE PERMIT.





Preliminary work on this programme should begin under contract arranged by DINA and NWTG immediately after the permit is granted. The contract will be assigned to the NMDS once the agency has commenced operations.

The programme must be set up to:

- a) Catalogue all the permanent Northern residents applying for project employment or training together with data on education, skill training, experience, etc.. Such a programme could draw upon available information such as the TERIS system, NORTRAN, Hire North, and the Department of Manpower and Immigration. This information bank should also do such things as locate the client from time to time, indicate job preference, and such other necessary information;
- b) Catalogue all pipeline and related jobs according to skill requirements, location, commencement and duration of the employment position and so on;
- c) Match clients to job positions and to training positions;
- d) Track clients through training and employment, permitting continuing recording of up-graded job experience, skill acquisition, etc., all to be done in some detail;
- e) Store information on such things as a client's supplementary tool requirement to be dispatched in an employment or training position, a client's clothing requirements for a job site, etc..

42. GOVERNMENT DEPARTMENTS, OWNER COMPANIES, CONTRACTORS, UNIONS AND NATIVE ORGANIZATIONS SHALL COOPERATE IN THE EVOLUTION OF THE NMDS BY FACILITATING THE SECONDMENT OF STAFF TO THE NMDS AS REQUIRED BY THE EXECUTIVE COMMITTEE OR EXECUTIVE DIRECTOR.

43. PERSONNEL SECONDED OR HIRED BY THE NMDS FOR FULL TIME SERVICE SHALL BE COMPENSATED AT RATES ESTABLISHED BY THE EXECUTIVE DIRECTOR.



COSTS OF OPERATION AND ADMINISTRATION OF THE NMDS SHALL BE BORN BY ALL USERS OF THE SERVICE (i.e. Owner of the pipeline and owner of plants,) IN PROPORTION TO THEIR RESPECTIVE DEGREE OF UTILIZATION.

45. FINANCIAL ADMINISTRATION OF THE NMDS SHALL BE ASSIGNED TO THE APPROPRIATE GOVERNMENT AUTHORITY ESTABLISHED TO OVERSEE COMPLIANCE WITH ALL TERMS AND CONDITIONS.

The initial funding of the NMDS should come from government through the appropriate government Authority which will be able to recoup this funding from the users of this service on the basis prorated to the number of clients delivered to project employment and training.



#### PRE-EMPLOYMENT TRAINING

46. ONE YEAR BEFORE CONSTRUCTION BEGINS, THE NMDS IN COOPERATION WITH OWNERS, CONTRACTORS AND UNIONS SHALL ASSURE THAT PRE-EMPLOYMENT INSTITUTIONAL TRAINING PROGRAMS ARE INITIATED TO FACILITATE PLACEMENT OF PERMANENT NORTHERN RESIDENTS INTO ON THE JOB TRAINING (OJT) AND EMPLOYMENT POSITIONS AT THE COMMENCEMENT OF CONSTRUCTION. THE NATURE, LOCATION AND NUMBER OF POSITIONS IN SUCH TRAINING PROGRAMMES SHALL BE DECIDED WITH DUE CONSIDERATION TO THE FOLLOWING FACTORS:
- a) EMPHASIS SHOULD BE PLACED ON ACQUISITION OF SKILLS FOR APPRENTICEABLE TRADES;
  - b) PRIORITY PLACEMENT SHOULD BE ON SKILL ACQUISITION MATCHED TO LONG TERM SKILLED LABOUR REQUIREMENTS IN THE REGION;
  - c) ABILITY OF EXISTING INSTITUTIONS TO ABSORB TRAINEES DESTINED FOR PROJECT RELATED OJT AND EMPLOYMENT;
  - d) ABILITY OF OWNERS AND GOVERNMENT TO SPONSOR SUCH PROGRAMMES;
  - e) THE SIZE OF PROJECT WORK FORCE REQUIREMENTS FOR FIRST YEAR APPRENTICES OR HELPER CATEGORIES.

This provision assumes the initiation of pre-employment institutional training. Coordination of programmes with GNWT and Canada Manpower would be necessary since these agencies are responsible for provision of institutions and training allowances respectively. Agreements with owners/contractors with respect to funding support, equipment provision and acceptance of graduates to OJT would have to be negotiated by the NMDS.





The purpose of pre-job training prior to the commencement of project construction is to assure the maximum number of Permanent Northern Residents and to a lesser extent Northern Residents have access to employment and OJT positions at the outset of project construction. The owners and contractors should be required to co-operate with the NMDS to maximize the number of persons to be provided with this training.

The NMDS should be responsible for co-ordinating these training programs and specifically responsible for assuring that candidates for training are assigned to training positions. The NMDS would not operate any training programs itself. This primary responsibility for assuring that the necessary training program is carried out should fall on the owners, who could carry out this task - directly, by contracting it out, through existing government training institutions or otherwise. When setting up and operating pre-employment training programs it is vitally important that completion dates of the program coincide with the commencement date of employment. Otherwise, successful graduates from the programs may become discouraged and take up other activities, never putting their newly acquired training to use.



ON-THE-JOB TRAINING

47. THREE MONTHS BEFORE CONSTRUCTION BEGINS THE OWNER AND EACH UNION SHALL FILE A JOINT PLAN OF PROCEDURE WITH THE RESPONSIBLE GOVERNMENT AUTHORITY, SETTING OUT THE FOLLOWING:
- a) THE MAXIMUM RATIO OF ON-THE-JOB TRAINEES, INCLUDING APPRENTICES, TO JOURNEYMEN FOR EACH JOB CATEGORY;
  - b) THE PREREQUISITE, IF ANY, FOR PLACEMENT IN THESE ON-THE-JOB TRAINING OR APPRENTICESHIP POSITIONS;
  - c) ORIENTATION AND COUNSELLING, AS WELL AS PRE-JOB TRAINING WHERE NECESSARY, TO PREPARE THE PERMANENT NORTHERN RESIDENTS FOR DISPATCH TO AN ON-THE-JOB TRAINING OR APPRENTICESHIP POSITION;
  - d) A PROGRAMME OF INSTRUCTION AND SUPERVISION FOR THE TRAINEE OR APPRENTICE ON THE JOB TO ENSURE THAT HE ACQUIRES SKILLS AND EXPERIENCE IN THE VARIOUS FACETS OF THE PARTICULAR TRADE;
  - e) A PROCEDURE FOR REGULAR PERIODIC ASSESSMENT AND EVALUATION OF THE PROGRESS OF THE TRAINEE OR APPRENTICE ON THE JOB LEADING TO JOB JOURNEYMAN STATUS.
48. THE UNION SHALL DISPATCH ALL QUALIFIED PERMANENT NORTHERN RESIDENTS REFERRED BY THE NMDS TO TRAINING OR APPRENTICESHIP POSITIONS ON THE JOB.

THE CONTRACTORS SHALL EMPLOY ALL QUALIFIED PERMANENT NORTHERN RESIDENTS REFERRED BY THE NMDS AND DISPATCHED BY THE UNION TO TRAINING OR APPRENTICESHIP POSITIONS ON THE JOB.



49. IF THE UNION OR CONTRACTOR REJECTS THE PERMANENT NORTHERN RESIDENT, THE MATTER SHALL BE DEALT WITH IN THE SAME MANNER AND BY THE SAME PROCEDURE SET OUT IN THE RECOMMENDATIONS IN THE SECTION TITLED "PREFERENCE SYSTEM", AND THE SAME PENALTIES SHALL ACCRUE.
50. NO UNION SHALL DISPATCH PERSONS TO EMPLOYMENT OR ON-THE-JOB TRAINING OR APPRENTICESHIP POSITIONS AND NO CONTRACTORS SHALL COMMENCE PROJECT CONSTRUCTION WORK UNTIL A JOIUNT PLAN OF PROCEDURE FOR EMPLOYMENT AND TRAINING OF PERMANENT NORTHERN RESIDENTS AND NORTHERN RESIDENTS HAS BEEN SUBMITTED BY THE OWNER AND UNION AND APPROVED BY THE RESPONSIBLE GOVERNMENT AUTHORITY THROUGH THE NMDS.

Before the owner and unions embark on the preparation of joint Plans of Procedure the government must indicate the minimum criteria these programmes must meet before they will be approved. It is important the purpose and requirements of the Plans be clearly understood by the owner and unions because failure to receive approval three months prior to the scheduled commencement of construction activities within the jurisdiction of the particular union, will delay such work.

#### Government Criteria

- a) Maximum ratio of OJT or apprenticeship positions to journeymen in each category:
- i) A minimum guideline for these ratios shall be the existing practise in the trades, especially in the apprenticeship trades. Such a guide must, however, be viewed from the prospective of a minimum, not a maximum. This guideline may not be as instructive for the non-apprenticeship trades. In the non-apprenticeship trades the ratio of trainees to journeymen may be more flexible where the practice in the Industry appears to be the rule.
  - ii) The ratio of trainees or apprentices to journeymen on the job will generally be inversely related to the degree of skill





demanded by the position being taught. This reflects the attention and supervision necessary by a journeyman training a trainee.

- iii) The ratio of apprentices and trainees to journeymen will generally be higher for work carried out at compressor stations and gas plants than the ratio found on pipe laying operations. This recognizes that safety and efficiency are considerations that may require fewer trainees or apprentices in those job categories that are more highly inter-dependent, one with the other from this prospective of production and safety.

Thus, a maximum ratio acceptable for line construction in one job category may be unacceptably low for the same job category located at a compressor station or gas plant.

- iv) It must be clearly understood that OJT programmes are designed for the purpose of providing skill training to a maximum number of Permanent Northern Residents.

- b) Prerequisites - The owner and unions must examine each job category to determine the minimum prerequisites necessary for entry into an on-the-job training or apprenticeship position. For apprentices, these prerequisites may be set by provincial or territorial requirements. It must be recognized by the owner and unions that such apprenticeship prerequisites as minimum years of schooling may bar many Permanent Northern Residents from apprenticeship training. A more flexible approach is desirable. Where such flexibility is possible the government should require the owner and unions to re-assess these prerequisites to ensure they are meaningful to Permanent Northern Residents.
- c) Orientation, Counselling, Pre-Job-Training - It is imperative that the trainee and apprentice clearly understand the role they play in the training programme, the operation and purpose of the programme, the expectations and demands



the programme will place upon them, and similar matters to ensure training on the job serves the purpose intended.

Some additional pre-job training may be necessary to provide sufficient knowledge to the trainee or apprentice to permit him to function in the training position. This should take place at the work site at the outset of the on-the-job training or apprenticeship programme.

- d) A programme of instruction and supervision
  - This should include:
    - i) Orientation and instruction of supervisors and journeymen training the trainee or apprentice, including such matters as the purpose and operation of the programme, techniques of instruction and supervision, and information programmes to assist the supervisors and journeymen with the distinct requirements of the Permanent Northern Residents;
    - ii) Classroom instruction at the camp site where appropriate, to ensure proper skill acquisition. This may take place periodically during the term of employment of the trainee or apprentice;
    - iii) A scheme of on-the-job training that assures a trainee or apprentice will acquire as wide a range of experience as possible and thus permit the aptitude and abilities of the person concerned to be maximized.
- e) Procedure for Periodic Assessment and Evaluation - The supervisor or journeyman should be required to make a regular report on the progress of each trainee. This should be relayed to those persons designated by the Plan of Procedure to operate the programme. This permits a central office to oversee the training being provided and to respond to any difficulties as they arise.



### SUPPORT SERVICES

51. THE OWNERS SHALL BE RESPONSIBLE FOR THE ACQUISITION OF ANY SUPPORT SERVICES NECESSARY TO SUSTAIN OR EQUIP NORTHERN RESIDENTS DESTINED FOR PROJECT TRAINING OR EMPLOYMENT. SUCH SUPPORT SERVICES COULD INCLUDE:

- a) TRANSPORTATION, ACCOMMODATION AND RELATED EXPENDITURES FOR PERSONS IN TRANSIT TO PROJECT TRAINING OR EMPLOYMENT;
- b) ALLOWANCES FOR TRAINEES PLACED IN EDUCATIONAL INSTITUTIONS;
- c) COUNSELLING SERVICES NOT OTHERWISE PROVIDED BY EXISTING GOVERNMENT AGENCIES, CONTRACTORS OR NMDS;
- d) TOOLS, EQUIPMENT AND CLOTHING NECESSARY TO PERFORMANCE OF TRAINING OR JOBS ASSOCIATED WITH THE PROJECT.

52. THE OWNERS SHALL BE RESPONSIBLE FOR THE COSTS OF SUCH SUPPORT SERVICES WHERE THESE SERVICES ARE DIRECTLY ASSOCIATED WITH PROJECT ON-THE-JOB TRAINING OR EMPLOYMENT AND WHERE THE COSTS OF SUCH SERVICES ARE NOT OTHERWISE BORNE BY GOVERNMENT AGENCIES AS PART OF THE LATTER'S NORMAL PROGRAMMES.

It is important to recognize that the NMDS and the owners and the contractors work together to assure the smooth functioning of the support services. The NMDS has an important consultative and support role to play in this area.

Experience gained from Alaska indicates the need for strong supportive services to assist Northerners to secure employment on the project. While the situation was slightly different in Alaska, (hiring halls in the immediate vicinity) there will still be numerous situations where Northerners will be in need of assistance where they find themselves in one of the major communities and held up, pending transportation





or final dispatch instructions. Accommodation allowances and other necessary funding will be necessary.

Assistance will also be needed in the area of allowances during training and numerous other areas that will become evident as the project evolves.



### MONITORING

53. THE OWNERS AND UNIONS SHALL BE REQUIRED TO PROVIDE THE NMDS WITH ALL DATA PERTINENT TO THE MONITORING OF THESE TRAINING AND EMPLOYMENT TERMS AND CONDITIONS. REPORTS AND DATA WOULD BE REQUIRED (BI-MONTHLY, EACH CONSTRUCTION SEASON, MONTHLY ETC.) AND SHOULD CONSIST OF THE FOLLOWING:

- a) NAMES OF PERSONS DISPATCHED CATEGORIZED BY:
  - i) PERMANENT NORTHERN RESIDENTS
  - ii) NORTHERN RESIDENTS
  - iii) OTHER
- b) THE NATURE, TYPE, AND CLASSIFICATION OF EACH NORTHERN RESIDENT REFERRED WITH SUPPORTING INFORMATION ON THE ENTRY SKILL LEVELS OF EACH.
- c) PROGRESS AND ACHIEVEMENT OF EACH NORTHERN RESIDENT IN OJT, APPRENTICESHIP OR OTHER PROJECT RELATED TRAINING.
- d) DURATION OF EMPLOYMENT OF EACH NORTHERN RESIDENT.
- e) ANY OTHER INFORMATION REQUIRED BY THE NMDS.

54. THE NMDS SHALL ASSEMBLE REPORTS ON COMPLIANCE WITH THESE TERMS AND CONDITIONS AND SHALL REFER ANY AND ALL FAILURES TO COMPLY TO THE APPROPRIATE GOVERNMENT AUTHORITY FOR ENFORCEMENT.



ON THE JOB EMPLOYMENT COUNSELLING

55. AN EMPLOYMENT ADVISORY AND COUNSELLING PROGRAM SHOULD BE ESTABLISHED BY THE OWNER THROUGH THE CONTRACTOR TO PROVIDE SUPPORT AND ASSISTANCE PRIMARILY TO NATIVE WORKERS IN THE CONSTRUCTION CAMPS.
56. EACH CONSTRUCTION CAMP SHOULD HAVE AN EMPLOYMENT ADVISOR (COUNSELLOR) WHO WOULD BE RESPONSIBLE FOR ON THE JOB COUNSELLING, ADVICE ON CAREER DEVELOPMENT, LIAISON AND ASSISTANCE TO THE EMPLOYER, THE UNION, OR THE WORKER IN REGARD TO COMMUNICATION OR OTHER PROBLEMS ON THE JOB.
57. TO THE MAXIMUM EXTENT POSSIBLE, EMPLOYMENT ADVISORS RETAINED BY THE CONTRACTOR FOR THESE FUNCTIONS SHOULD BE NATIVE PEOPLE PARTICULARLY IN SITUATIONS WHERE A LARGE NATIVE WORK FORCE IS PRESENT IN THE CAMP. ALSO, THESE PEOPLE SHOULD BE PROFESSIONALLY TRAINED TO THE MAXIMUM EXTENT POSSIBLE AND/OR PROVIDED WITH TRAINING TO ENABLE THEM TO PERFORM THEIR FUNCTION. SUCH TRAINING SHOULD INCLUDE EXPOSURE TO THE CONSTRUCTION INDUSTRY AND/OR KNOWLEDGE OF THE CONSTRUCTION INDUSTRY.
58. THE CAMP EMPLOYMENT ADVISOR SHOULD BE RESPONSIBLE FOR THE ADMINISTRATION OF ALL RECORDS PERTAINING TO THE FUNCTION OF HIS JOB. SUCH RECORDS SHOULD BE AVAILABLE TO NORTHERN MANPOWER DELIVERY SYSTEM PERSONNEL AS PART OF THE LATTER AGENCY'S ONGOING RESPONSIBILITY FOR MONITORING PERFORMANCE WITH TERMS AND CONDITIONS.

Sufficient evidence has been introduced with respect to the necessity of having an adequate counselling service to assist a native person in adjusting to the construction work force.

Evidence from Alaska witnesses, Native Outreach staff, government officials and two Applicants indicated a need for some type of counselling service for native people at the construction site. Witnesses also pointed out the





need for backup counselling services for the families of the native worker back in the home community.

With respect to family counselling, we have recommended that this function be carried out at the pre-employment orientation level back in the home community. And therefore, it is not considered further in this section.

In the opinion of some of the Alaska witnesses, the term counsellor has an unfavourable connotation in that it caused concern among native people and others possibly involving the social stigma associated with having to be counselled. There was some suggestion that the answer was to adopt a different name for the counselling function. Also, the employment advisory function as we have described it, should be offered to all workers in the construction camp and not just native persons. This would reduce the possibility of a stigma attached to native counselling.

There has been some concern expressed over the jurisdiction of the employment advisor (counsellor) and whether this would conflict with the responsibilities of the Union job steward. We are assuming that the job steward function is concerned with the normal union-management collective bargaining process and grievances and that the employment advisor function is concerned with the relationship of the native person to his job situation, his foreman, his Union and the contractor generally. Therefore, the employment advisory function is a liaison and counselling service for the individual worker.

In establishing the incidence of responsibility for employment advisory or counselling functions, we have been concerned with whether a counsellor reporting to the project company, the onsite contractor, or some other independent body, would achieve the desired credibility with the native work force. There are disadvantages associated with sponsorship from any of these bodies. However, our recommendation would be to allow the owner responsibility for the success of this program because he is the one that must comply ultimately with these terms and conditions. The difficulty with adopting this is that the owner is only going to have one or two representatives on each construction spread and therefore it is not clear that the owner's representatives would have responsibility for making decisions with respect to this employment advisory service. Therefore, it may be in the best interests of the owner to delegate responsibility to the onsite contractor in regard to the day to day settlement of problems.

In the evolution of an employment advisory service in the camps, we also feel that certain consultations should be



made with native organizations, their representatives or other persons knowledgeable about problems of native participation in the workforce. However, we have not embodied a recommendation to consult with a native organization in these particular terms and conditions because we have assumed that the organizations are part of the Northern Manpower Delivery System apparatus thereby affecting the necessary senior level consultations if problems arise.

Some of the functions of the employment advisor at the construction camp would include the following.

- a) assistance to the native employee in adjusting to camp living conditions and job circumstances;
- b) acting as a liaison person between the employer, the union and the native employee;
- c) contact, orientation and counselling with newly arrived native workers or trainees;
- d) monitoring of the progress of trainees on the job and assistance to employees in maintaining their own work records for training or apprenticeship;
- e) participation in development of on the job training programs;
- f) evaluation of work site policies and procedures which affect the utilization of native workers.

On a more general level, he will be able to acquaint the employer and Union representatives with native social and cultural background so that they can better understand the needs and feelings of native employees.

Where problems peculiar to native employees arise, the employment advisor would be best suited to work with the employer and Union job steward. The employment advisor would keep records of all native terminations and evaluate the needs of native workers for leaves, and provide counselling on program changes that would assure retention of native workers on the job.

The employment advisor would also assist native persons in understanding standard Union grievance procedures and explain Union hirehall methods should the worker wish to quit and hire on again later. This function would be in co-operation with the job steward who may request the assistance of a employment advisor in performing this duty particularly with a native person. The employment advisor would also assist the individual in appraising



his own job mobility prospects, and career development objectives. Counselling in the areas of financial or family affairs may also be desirable. In this regard, it would be necessary to have some liaison with counselling or other social services in the home community of the person affected.

The employment advisor would be privy to a great deal of personal and confidential material and therefore must be very discreet in order to maintain his own credibility with the workers.

In order to attract the appropriate caliber of counselling personnel, it will be necessary to have compensation that encourages people to enter this field and also to stay on the job. This means the employment advisor must be paid a good salary in relationship to pipeline wages. In addition, the employment advisor should be provided with transportation, separate office facilities, secretarial assistance and equipment necessary to the conduct of his job. His office should be physically removed from the office facilities of the contractor and possibly be located in the recreation area. Privacy of the office is essential.





## SIMULATED CONSTRUCTION CAMP

59. CONSIDERATION SHOULD BE GIVEN TO THE ESTABLISHMENT OF A SIMULATED CONSTRUCTION CAMP AT OR NEAR FORT SMITH OR ALTERNATIVELY AT A LOCATION WHICH WOULD LATER BE UTILIZED FOR CONSTRUCTION ACTIVITY FOR THE PIPELINE. THE CONSTRUCTION CAMP SIMULATION WOULD BE FOR THE PURPOSE OF TRAINING AND ORIENTING NORTHERN WORKERS PRIOR TO EMPLOYMENT IN PIPELINE CONSTRUCTION.
60. CONSULTATION WITH THE OWNER AND SELECTED CONSTRUCTION CONTRACTORS SHOULD BE UNDERTAKEN PRIOR TO THE ESTABLISHMENT OF SUCH A CONSTRUCTION CAMP SIMULATION. CONSULTATIONS SHOULD CONSIDER THE LOCATION, NATURE, SIZE AND CURRICULUM OF A CAMP.
61. THE OWNER THROUGH THE PROJECT CONTRACTORS SHOULD BE RESPONSIBLE FOR THE CONDUCT AND COSTS OF THIS PROGRAM.
62. THE CAMP COULD BE OPERATED JOINTLY BY THE UNIONS AND THE CONTRACTORS WITH THE UNIONS SUPPLYING THE INSTRUCTION AND THE CONTRACTORS SUPPLYING THE NECESSARY EQUIPMENT.

It has been suggested that much of the construction training and general pre-job orientation of native northerns might be best accomplished using a simulated construction camp as the training ground. Such a camp could be built, in large part, by trainees on the actual site of one of the proposed construction camps. An alternative would be to locate the simulation at the Adult Vocational Training Centre (AVTC), Fort Smith, where pre-job training would be carried on. The advantages of using Fort Smith is that it is close to pre-job training facilities at Fort Smith where employment could be used, and recycled to other training programs, etcetera. The disadvantages of Fort Smith include that it would not effectively be a simulation of a real camp construction circumstance. Also, Fort Smith is a 'big city' compared to real camp circumstances. The advantages of adopting a simulation camp on or near the site of future construction activity is that it would create a more realistic circumstance



and it would insulate the trainees from the attractions of the Fort Smith community. And it would provide a vehicle for actual training. Disadvantages include the cost of set up, the logistical problems associated with moving people to the location and keeping them there during the course of training, and preparation and cost of a suitable site.

If such a camp were established well before the start of actual pipeline construction, it would be possible to train a certain number of native workers in the skills they would require in a setting similar to their eventual job. It would also make possible orientation programs about camp life and general procedures, and could also serve as a training ground for native counsellors.

The advice of the owner and the contractor as well as the Union's should be sought about which classes should be taught and what types of practical or theoretical training would be needed. Advice should also be sought on the balance between simulating pipeline station or plant construction and whether it would be possible to combine these in one simulation.

While the camp would be operating before actual construction commenced, it could also be utilized during construction and possibly during down time in the spring, summer or fall.



CAMP FACILITIES, RECREATION AND SECURITY

63. THE PRACTICE OF THE CONSTRUCTION INDUSTRY ON A PROJECT OF THIS KIND APPEARS TO BE SUCH THAT PROVISION OF SUITABLE CAMP AND RECREATION FACILITIES WILL LEAD TO A REDUCTION IN GENERAL LABOUR ATTRITION IN CAMPS WHERE LABOUR ATTRITION PROBLEMS ARE ASSOCIATED WITH LACK OF RECREATIONAL FACILITIES. THEREFORE, THE OWNER AND HIS CONTRACTORS WILL BE EXPECTED TO CONFORM TO THE INDUSTRY NORM IN REGARD TO THE PROVISION OF SUPERIOR ACCOMMODATION AND RECREATIONAL FACILITIES. AN ACCEPTABLE STANDARD SEEMS TO BE PROVISION OF THE FOLLOWING:
- a) LARGE, BRIGHT, CLEAN ROOMS, DESIGNED FOR SINGLES OR COUPLES;
  - b) ACCOMMODATION FOR COUPLES IN A SEPARATE SECTION OF THE CAMP FACILITY;
  - c) ROOMS TO BE EQUIPPED WITH OUTLETS FOR RADIO, PLUG-INS;
  - d) ROOMS TO BE EQUIPPED WITH PROPER LOCKS OR SECURITY, ETCETERA, SO THAT AN OCCUPANT'S BELONGINGS ARE SAFE AND SECURE;
  - e) AMPLE AND MODERN SHOWER, WASHROOM AND TOILET FACILITIES;
  - f) PROVISION FOR ADEQUATE LAUNDRY FACILITIES FOR PERSONAL USE; AND
  - g) PROVISION OF SEPARATE ACCOMMODATION AND WASHROOM FACILITIES FOR WOMEN.
64. THE OWNER AND HIS CONTRACTORS SHOULD BE REQUIRED TO MAKE ADEQUATE PROVISION FOR FOOD PREFERENCES OF THE NATIVE PERSON IN THE CONSTRUCTION CAMP. THIS WOULD INCLUDE PROVISION OF "COUNTRY FOODS".





65. THE OWNER AND HIS CONTRACTORS SHOULD BE REQUIRED TO PROVIDE ADEQUATE RECREATIONAL FACILITIES AND ALSO ADEQUATE PROGRAMS FOR RECREATION FOR WORKERS IN THE CAMP. THIS COULD INCLUDE THE FOLLOWING:
- a) TELEVISION FACILITIES;
  - b) MOVIES;
  - c) LIBRARY SERVICES AND READING ROOM;
  - d) PARTICIPANT SUPERVISED CARD ROOMS FOR PLAYING POKER, ETC;
  - e) GAMES ROOM WITH SUCH FACILITIES AS SHUFFLEBOARD, PING PONG, POOL TABLES, ETC;
  - f) FACILITY FOR THE CONTROLLED USE OF ALCOHOL;
  - g) PERIODIC ENTERTAINMENT PROGRAMS;
  - h) POSSIBLE PROVISION FOR OTHER SPORTS ACTIVITIES (CROSS COUNTRY SKIING, ETC.) AND SELF IMPROVEMENT PROGRAMS (CRAFTS, PUBLIC SPEAKING, CULTURE APPRECIATION, ETC.)
66. THE OWNER SHALL PROVIDE THE NECESSARY AUTHORITIES WITH COMPLETE CO-OPERATION IN REGARD TO POLICING AND SECURITY ASPECTS OF THE PROJECT AND ITS IMPACTS. THIS SHALL INCLUDE THE FOLLOWING:
- a) COMPLETE ACCESS AT CONSTRUCTION SITES TO POLICE AUTHORITIES;
  - b) COMMITMENT TO USE SUCH POLICE AUTHORITIES IN ALL MATTERS OUTSIDE NORMAL GUARD ENTRY AND EXIT SECURITY;
  - c) COMPLETE EXCHANGE OF INFORMATION TO THE AUTHORITIES WITH RESPECT TO THE DISCHARGE OF UNDESIRABLE PERSONS FROM THE PROJECT;



- d) PROVISION OF ADEQUATE INFORMATION TO AUTHORITIES REGARDING POSSIBLE ILLEGAL ACTS ANTICIPATED OR TAKING PLACE WITHIN THE CONSTRUCTION AREAS; AND
- e) THE IMPLEMENTATION OF ADEQUATE EDUCATION PROGRAMS FOR SECURITY STAFF WHICH WILL ENSURE THAT SUCH STAFF ARE AWARE OF THEIR OWN RESPONSIBILITIES IN RELATIONSHIP TO THAT OF OTHER AUTHORITIES.

We are aware of and informed that the framework for negotiating collective agreements between unions and contractors on a project of this kind makes adequate provision for recreation and acceptable camp conditions and standards. We can assume that the unions negotiating such contracts will make adequate provision for the acceptable recreation and food standards in camps which will reduce to the maximum extent possible labour attrition associated with these problems. However, we would like to ensure that in negotiating provisions dealing with for example, food services, Unions and contractors recognize the merits of having country food available to native persons on the project. This will also give the southern worker an appreciation for northern culture in an indirect way.

In regard to recreation facilities and programs, we are most impressed with the superior facilities and programs available at the Syncrude/Construction Project at Fort McMurray. In recent years, there has been a noticeable trend for better and more complete recreational facilities in new construction camps. However, due to the mobile nature of the pipeline construction project, it may not be possible to adopt recreational programs and facilities which are more appropriate to a longer term camp such as that at the Syncrude project. Unapologetically, we have faith in the unions to negotiate a suitable recreational package providing they attempt to accommodate in collective bargaining the requirements of the native work force. Such accommodation should include consideration of alternative forms of recreation which native people in northern Canada may prefer over southern style recreation. There is a dilemma with respect to the applicant's pledge to maintain camp security and specifically to ensure that nobody is allowed outside of the construction camp. Does this mean that pipeline workers and other construction staff will not be allowed to fish, not allowed to cross-country ski, etc? It is unrealistic to assume that there will be no pressure from workers to pursue this.

In regard to food, the collective agreements in the construction industry are extremely specific in terms of the quality, quantity



and type of food that is to be served to all union personnel on the site and as unfair as it would be to put a southerner into a northern native community and expect him to suddenly change his eating habits to coincide with those around him, it is equally unfair to expect the native person to accommodate southern eating habits. Therefore, it is essential that a variety of country food be made available in every cafeteria or camp mess on the project. The type and quantity of such items that should be made available could be established in co-operation with representatives of the native organizations, the Northern Manpower Delivery stet. and unions negotiating collective agreements with the contractors.

In regard to camp security, the applicant companies have both stated that they will have a private security force to police camps and construction security. They have both indicated that they intend to give full support and co-operation to the Royal Canadian Mounted Police (R.C.M.P.) in respect to normal police activities and that the camp security force will consist of private guards hired to maintain security. Even in this area, it has been suggested by union spokesmen and supported by applicant evidence, that this will have a psychological effect on the work force. Further, the ability to search or detain workers over security matters will be extremely limited.

We have not addressed the problem of security in respect to workers bringing in contraband (liquor, drugs, weapons, etc.). These should be within the control of the relevant police authority in the region. Our major concern is in regard to actual policing in the event of criminal acts, fights, etc. Here it seems important to recommend that complete co-operation between the relevant police authority and camp security be adopted.





## WORK SCHEDULES

67. THE NEGOTIATION OF HOURS OF WORK IS WITHIN THE RESPONSIBILITY OF UNIONS AND CONTRACTORS IN NEGOTIATING COLLECTIVE AGREEMENTS. LABOUR AND MANAGEMENT NEGOTIATORS ALREADY RECOGNIZE THE MONITORY ADVANTAGES TO THE WORKER AND TO THE CONTRACTOR OF AVAILABILITY OF OVERTIME. THIS HAS HAD THE EFFECT OF INDUCING WORKERS TO GO TO AN ISOLATED CONSTRUCTION SITUATION AND STAY ON THE JOB.
68. IN HOURS OF WORK NEGOTIATION, THERE SHOULD BE RECOGNITION OF THE NEED TO PROVIDE FOR ON-THE-JOB CLASSROOM TRAINING TIME AS PART OF THE NORMAL WORKING DAY. UNIONS AND CONTRACTORS SHOULD RECOGNIZE THE POSSIBLE REQUIREMENT FOR OJT, APPRENTICESHIP, CLASSROOM TRAINING IN THEIR COLLECTIVE BARGAINING LEADING TO PROJECT AGREEMENT.

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It has been suggested that workers on the project may work to a schedule of twelve hours per day, seven days per week. The length of each work period, or rotation, has not yet been established. In Alaska, the rotation period was nine weeks on the job with two weeks for rest and recreation.

The whole question of work schedules and the length of work periods is normally left in the hands of contractors and unions to negotiate. However, there are some observations which could be made for consideration by the parties involved in such negotiations. The hours of work should generally be long enough to ensure sufficient overtime to encourage workers to accept and continue to endure the rigours of project employment. If working hours are long enough it is possible that workers and in particular native workers would have less free time on their hands in camp to fret about their homes and families.

Work schedules may include some classroom training at camp sites. A Northerner scheduled for classroom instruction as part of his training may combine a certain number of working hours per day with a certain number of classroom hours to make his total daily hours. We are concerned with ensuring that parties to a collective agreement recognize the need to accomodate on-the-job classroom training as part of the normal working day.



## REST AND RECREATION LEAVE

69. IN PROVIDING TRANSPORTATION FOR NORTHERN WORKERS TO THEIR HOME COMMUNITY OR FOR SOUTHERN WORKERS BACK TO THE POINT OF HIRE, THE OWNER SHALL ROUTE SOUTHERN WORKERS DIRECTLY SOUTH RATHER THAN ALLOWING STOPOVERS IN THE NORTH. A PROJECT EMPLOYEE WHO DECLINES TO FOLLOW THIS REQUIREMENT PLACED UPON THE OWNER SHALL PAY ALL HIS OWN TRAVEL AND TRANSPORTATION COSTS.
70. THE PARTIES TO COLLECTIVE BARGAINING AND THE OWNERS SHALL GIVE CONSIDERATION TO HAVING SHORTER WORK PERIODS THAN IN ALASKA.

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In Alaska it is 9 and 1, and 9 and 2, that is 9 weeks on the job and 1 or 2 weeks off for rest and recreation. In respect to the Mackenzie Valley Pipeline, we have had various recommendations from the applicants and from the unions.

The problem generally is that construction of a pipeline in the cold and dark of mid-winter, in isolation for long period during the day (10 - 12 hours), 7 days a week, is very taxing on the workers and has a psychological effect on all people who work under such conditions. Factors such as safety, camp morale, and psychological effect on people living under these conditions for long periods of time make it important that there be a regular period of rest and recreation at intervals that are brief enough that major problems do not develop for the majority of workers. In Alaska the average period on the job, even though the schedule period was 9 weeks before a rest period had been earned, was 5 to 6 weeks. After 5 or 6 weeks in a construction camp the average worker in Alaska would terminate himself and seek rest and recreation either in his home community or in one of the major centres such as Anchorage or Fairbanks. All too often he would fail to return to the job.

As far as rotation is concerned the applicants have indicated that they will pay transportation to all southern workers to and from Edmonton and have also indicated that they will return all workers to Edmonton whether on a normally established rotational period or whenever the individual terminates himself. Usually there is a contract stipulation that a worker spend a certain time or return transportation is not paid. Whatever



normal rotation is to be set down, the applicants have indicated that they will permit a more flexible rotation period for northerners. That is, northerners will be permitted to leave the job site prior to the scheduled rotation period and will be transported back to their communities. The only qualification on this has to do with expense. The applicants have indicated that they will pay for the natives' transportation back to his community based upon the amount it costs to rotate a southern worker, the cost to be calculated to and from Edmonton for a southern worker. This is to be pro-rated over the normal period scheduled for a term of employment in the North. Thus, if the normal period is 6 weeks and costs on the average \$250.00 per person to and from Edmonton and a northerner terminates himself after 3 weeks employment, he will be credited \$125.00 for his transportation to and from his community. Anything in excess of that will be charged to the northerner and deducted from his pay entitlement.

A northerner who leaves the work site prior to the end of his normal tour of duty will be required to report to the NMDS when he is ready to return to the work site. The NMDS should only refer him to an employment position after it has referred qualified clients on a first-in-first-out basis.

This is different than the situation where a northerner stays his full term and takes his normal rest and recreation period. In that situation he would return to his job automatically at the end of the rest and recreation period. It is hoped that this will encourage northerners to remain on the job.

Perhaps there should be a bonus system to encourage both northern and southern employees to remain beyond their normal work term. However, this is contrary to the accepted notion that to remain beyond a certain period of time tends to make the workers a danger to themselves and to the people they work with. There is a stage at which the worker is psychologically in need of a break period.





## SAFETY ON THE JOB

71. INDUSTRY PRACTICES WITH RESPECT TO SAFETY ON THE JOB AND TRAINING FOR SAFE PRACTICES CAN BE EXPECTED TO BE MAINTAINED ON THIS PROJECT. DUE TO THE MAGNITUDE OF THE PROJECT, THE NATURE OF CLIMATE AND ENVIRONMENT IN WHICH THE PROJECT WILL BE CONDUCTED, AND A COMPONENT OF LESS-EXPERIENCE NORTHERN WORKERS AND TRAINEES, IT WILL BE NECESSARY TO INITIATE SPECIAL SAFETY TRAINING AND MAINTAIN RIGOROUS SAFETY STANDARDS ON THE JOB.
72. SAFETY INSTRUCTION IN TRAINING AND ORIENTATION PROGRAMS SHOULD BE CONDUCTED IN THE RESPECTIVE NATIVE LANGUAGES WHERE NATIVE EMPLOYEES ARE PRESENT ON A PROJECT, AND WHERE SUCH NATIVE WORKERS HAVE NO KNOWLEDGE OF THE ENGLISH LANGUAGE.

Both the applicants and the unions have stated their positions with respect to their concerns for safety of workers on the project. The interests of the unions in protecting their members by means of collective agreement stipulations as well as adherence to the various safety ordinances have been stated and it is expected that the collective agreement and the pre-job conference will deal adequately with the whole issue of provisions of job safety. There will no doubt be safety committees with scheduled meetings and established procedures. It would seem important, however, that particular emphasis be placed on channeling safety information to the men on the job through special training programs and in particular to native persons who may not have had experience with the construction industry and its hazards. Additionally it will be necessary to ensure that such safety training information be provided in the native languages where groups of workers have no knowledge of the English language.



## CONDUCT OF EMPLOYEES ON THE JOB

73. THERE SHOULD BE ONE STANDARD OF CONDUCT FOR ALL EMPLOYEES ON THE JOB. WE WISH TO ENSURE THAT THE SAME DEGREE OF COMPASSION THAT IS EXERCISED FOR A SOUTHERN WORKER WITH A SPECIAL PROBLEM BE AFFORDED TO A NORTHERN WORKER WITH A SPECIAL PROBLEM. WE ALSO RECOGNIZE THAT BECAUSE OF THE INEXPERIENCE OF THE NORTHERN WORK FORCE THAT MORE THAN THE NORMAL NUMBER OF PROBLEMS MAY BE EXPECTED TO MATERIALIZE.

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It has been stated emphatically by the unions that there is to be one standard of conduct for all workers, northern or southern, native or non-native. The Unions take this position as a matter of principle because they say you must treat all workers alike and that it is unfair to the southern worker or the non-native worker to treat him in a manner different than the native worker by permitting the latter to abide by a less severe standard of conduct. The unions go on to say that by adopting double standards one is not holding the individual worker responsible or accountable for his actions and that this fails to develop the appropriate work habits. The unions' position is that one is not helping but rather hurting the native people by creating a preferred standard for the native person, a standard that will not be found acceptable by other employers.

It must also be recognized that a native worker on a construction site particularly if he has had either none or only limited exposure to wage employment situations, is in the situation which almost entirely reflects outside culture and contains very few if any aspects of native culture. The concepts of time, punctuality, supervision and so on are concepts which many native workers will be trying to learn for the first time. A new experience in the regimented construction life will lead to difficulties in understanding and adjustment for a northern worker and therefore problems associated with this must be viewed with some flexibility and compassion. The difficulty lies in determining the degree of flexibility and the amount of compassion that may be used in a difficult job situation to assist the native worker to adapt. The danger is that too flexible an approach can create a double standard which can be abused by the worker.

We do not know the answers to these problems but recommend that training programs and orientation for job stewards, supervisory staff and employment advisers emphasize the need



for compassion and understanding in these areas. We also emphasize that successful northern native participation in this project will depend in large measure on positive response to the needs of the northern work force. Close liason between employment advisors, job stewards, and supervisory staff will hopefully mitigate problems in this area.





## MONEY MANAGEMENT

74. OWNERS AND THEIR CONTRACTORS SHOULD BE REQUIRED TO PROVIDE FACILITIES AND/OR ACCESS FOR CONSTRUCTION WORKERS WISHING TO DEPOSIT THEIR PAY CHEQUES IN CREDIT UNIONS, COMMERCIAL BANKS, OR PORTIONS OF THEIR EARNINGS TO BE DISTRIBUTED TO THEIR FAMILIES IN THE HOME COMMUNITY.
75. TRAINING AND ORIENTATION PROGRAMS AS WELL AS ON THE JOB COUNSELLING SERVICES SHOULD INCLUDE ASSISTANCE OR ADVICE TO PERSONS ON MONEY MANAGEMENT.

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Individual rights in respect to the disposition of pay cheques must be maintained. However, orientation and training programs for northern workers should deal with life skills and money management matters. Also facilities and services should be provided for workers wishing to spend, invest, or save portions of their earnings. Also provision must be allowed for workers wishing to send part of their earnings back to their families in the home community for the support of these families.

The problems associated with failure to provide money management counselling, credit union or banking service are quite apparent from examination of relevant Alaska experience and also construction experience in other parts of Canada. We note that the Labourers International Union on the Syncrude Project has initiated money management-training as part of its life skills training programme at Keyano College at Fort McMurray and this programme has been partially successful in effectively managing earnings of native people on the Syncrude Project.

With respect to the form of financial services that could be provided in camp, we are aware that recommendations regarding establishment of credit unions, agent banking and other financial services have been made. At this point we do not make specific recommendations on which form should prevail because this would be the subject of discussion and negotiation between the unions and contractors.

Money, management, counselling and orientation should also include discussion of union membership dues, obligations, withdrawal dues and initiation fees. Provision should also be made by the unions and contractors as part of a pay policy, for deferred or installment payment of initiation fees.



WOMEN IN THE WORK FORCE

76. THE OWNER SHALL INSURE THAT THERE WILL BE NO DISCRIMINATION AGAINST WOMEN AND THAT ACCESS TO TRAINING, THE NORTHERN PREFERENCE AND MANPOWER DELIVERY SYSTEM, UNION MEMBERSHIP AND DISPATCHING SHALL BE AFFORDED TO WOMEN IN THE SAME REGARDS AS ALL OTHER EMPLOYEES.

In the construction of the Alyeska pipeline, hundreds of women through minority legislation gained employment is nearly all levels of pipeline employment. In Canada the trend is toward more and more women taking part in the construction industry. The trend continues at the Syncrude construction project at Fort McMurray. At Keyano College where the Labourers Union are involved in training prospective labourers, approximately one-half of the students graduating are women.



## REGIONAL STABILITY AND GROWTH

1. During the construction of the Mackenzie Valley Pipeline and related projects, the Greater Pipeline Impact Region will experience rapid growth that will require major social and economic readjustment. Projects such as the pipeline and the development of large scale off-shore and on-shore hydrocarbon reserves are enormous in comparison with the small and underdeveloped economy of the impact region. In terms of the stability of regional growth and development, these projects represent a capability to inject purchasing power into the regional economy and to command its resources on a scale far greater than has been experienced before. Not only will planners and administrators have to be concerned about the proposed pipeline and related projects, they will have to give thought to the future of the region beyond these events. Once a favourable decision on the initial pipeline has been made, a long, uneven and at times discontinuous sequence of additional large projects would likely occur.

2. Because the problems that might be encountered could be massive and disruptive, a central concern of government will have to be to keep matters which have a bearing on regional growth as orderly as possible. Government will need to ensure that the pipeline and other major projects, whether these occur concurrently or as a sequence, do not so overwhelm the regional economy as to greatly impair its ability to serve the residents of the region.

3. Questions of economic justice and income distribution will have to be given serious attention. For example, government will have to ensure that low income groups, particularly where incomes are relatively static, are not unduly harmed. It will have to ensure that the incomes of some people do not grow at the expense of others - for example, landlords and tenants. Particular concern must be given to economic justice for native people. With each new wave of settlement and industrial development, these people have been split further away from their own way of making a living. This process has now gone so far that many native people, and perhaps all to some extent, have become dependent on the pervasive northern welfare system. The unresponsiveness of welfare outlays to rapid price escalation, and the consequent worsening position of welfare recipients, are phenomena that are so well known that further comment on the point would seem unnecessary.





4. Regional and federal politicians, planners and administrators, in consultation with the people that live there, should now begin to formulate general plans on the future shape of the economy and society of the Greater Pipeline Impact Region. They should then take steps to ensure that the pipeline and other such developments are not destructive of such plans. The matter of adequate planning has now become critical. In the face of pressures from a project as massive as the pipeline, it would be difficult to formulate and maintain safeguards that are part of any carefully worked out plan. However, up to the present, scarcely anything resembling adequate forward thinking has been done with respect to the region that the pipeline will traverse. The possibility of chaos is an obvious danger.

5. In developing plans about the regional economy, government must have as a prime objective the preservation and strengthening of that economy's basic dual character. This would seem in keeping with pronouncements such as the "National Objectives for Northern Development" in which growth and development were viewed as proceeding in accordance with the preferences and aspirations of northerners. A great body of evidence presented to this Inquiry, and particularly at the community hearings, demonstrated conclusively that the preferences and aspirations of native northerners are that their side of the regional economy should not only continue, but should once again become a meaningful and supportive part of their lives.

6. Planners must therefore be mindful that the overall economy of the Mackenzie Valley/Delta consists not only of a largely non-native commercial/industrial component, but also of a subsistence/cash component, upon which a great many native people still depend. The survival and growth of both of these sub-economies, and the creation of stronger links or "bridges" between them, should be a central concern of government as the Mackenzie Valley enters the pipeline era.

7. It is not being proposed that government maintain and strengthen the subsistence economy in the spirit and style of some kind of "living museum". If this were all that could happen, that economy would not be worth preserving. The rationale for supporting and strengthening it must arise out of the fact that it is the basis for the livelihood of a majority of the people who now live in the pipeline region. During past decades, the prevalent thinking in government was that the subsistence activities of native people would soon decline and perhaps disappear. It was envisaged that Native people would quickly



move out of the "stone age" and take "their places" in the wage economy, and policies were formulated to encourage this. But it would now seem that faith in such policies was misplaced. The resurgence and strength of the present native societies of the pipeline region, and their continued reliance on renewable resource harvesting, have abundantly demonstrated how inappropriate the policies were.

8. From the point of view of economic stabilization, the subsistence economy performs the function of a "built-in stabilizer" within the regional economy because it enables native people to avoid many of the negative consequences of phenomena such as price inflation. Native people are not generally income maximizers; they tend to aim for that level of annual income that will satisfy their needs during the course of the year. Such income can be derived from a number of sources: the land, wage employment, welfare, etc. Obtaining it from the land may still be the preferred mode, but if land-based activities are not sufficiently productive, then wage work or, if need be, welfare will be taken. Additional wage work will be undertaken when native people require cash for a major purchase such as a boat or an outboard motor. In all communities, cash that is earned via wage employment or derived from transfer payments is used for the purchase of "store bought foods" which now supplement the land-based diet. However, the preferred source of food is always the land. Native people have typically summarized the varied economic role that the land plays in their lives by the expression "The land is our bank".

9. Because of their access to the land, most native people can still avoid rising prices by increasing their reliance on fish, game and furs. When store bought foods become too costly, their take of "country food" can be increased. There is now considerable variation in the degree to which various groups of native people rely on renewable resource harvesting, but even native people who are firmly locked into the wage economy have links back to the land via networks of relatives and friends. The degree to which these links are normally exploited can be increased when more country food is needed to supplement groceries that the paycheck can buy.

10. The importance of the reverse pattern - from the wage economy back to the subsistence economy - should not be overlooked. A principal ethic of native society is that of sharing. It is not unusual for native people who work for wages to share the goods bought with their cash incomes with people who are more dependent

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on the land. Income from the land is also unstable and means of supplementing it are also needed.

11. Native people would experience serious difficulties if existing interactions between the subsistence and industrial economies were threatened or broken. The ability of many people to utilize both the wage and subsistence sectors should continue to play an important economic role and a great deal of attention should be given to strengthening the two-way connections that are involved. Such attention could, as one possibility, include drawing together aspects of the territorial government that impinge on these patterns - for example, economic development, game management, tourism - and placing them into a single government department which would be responsible for the "health" of the various components that are, or could become, part of the dual economy. This department could also establish conditions that would ensure a flow of people back and forth between the dual economy's two sides.

12. To this point, the discussion has proceeded as though changes in circumstances relating to native people, such as the orientation of government programs, might be all that would be needed to improve the lot of these people. While a change in such factors would undoubtedly have a large effect, it is an oversimplification to argue that they would make much difference unless many other things also happened that re-established native awareness of the self and the relation between the self and the group. Significant numbers of young native people are caught in the traps of alienation and anomie. Many of these people, as well as older people, are also caught in other traps of which alcoholism is both an expression and an example. There should be no illusions to the fact that these are limited problems that will disappear if government improves its administrative and consultative procedures, if there is a land claims settlement, and if the dual economy functions properly. One must bear in mind that the discussion of the foregoing paragraphs is mainly an economic one. It makes certain generalizations and suggestions that are meant to be helpful, but does not do so under the misconception that they would resolve all of the complex problems that currently beset native people.

13. In the case of the industrial/commercial economy, stabilization problems arising out of huge projects such as the proposed pipeline would differ substantially from those experienced in the subsistence/cash economy. In the short term, such problems could centre mainly on the shortage of goods and





services and interruptions to supply. In the longer term, they could derive more from serious distortions to the allocation of regional resources and to the distribution of income.

14. Shortages and disruptions of supply could take a number of forms. They would occur differently in each of the labour market, the market for goods and services, and the capital market. Solutions to the problems of each of these markets would require somewhat different approaches.

15. In the labour market, the pipeline and related projects will play a determining role in setting regional wages because they will be able to offer wages that are higher than regional norms. Such wages will prove attractive to local labour and regional firms will have to try to match them or face high turnover rates. Matching pipeline induced wages would be very difficult unless a firm has access to the "cost plus" money streams that will be generated by the pipeline project. The supply of resident replacement labour that can be brought into the labour market by an increase in regional participation rates will be limited because of the small size of the regional population. In a population of some 20,000, the supply of labour can be very quickly exhausted under boom conditions.

16. The resolution of the foregoing problem would seem to lie in taking a generally negative approach to the employment of regional labour on the pipeline. While local people will want to work on the pipeline, and government should assist them in getting good jobs, the promotion of large scale involvement should definitely be avoided. The more that the regional labour force determines to stay where it is, the better the odds are that the regional economy will survive more or less intact during pipeline construction. What the pipeline applicants have said about minimizing the involvement of regional residents in pipeline construction, and maximizing it during the operations phase when the labour requirements of the pipeline would impose no great strain on the regional labour force, makes a good deal of sense.

17. In the market for goods and services, a particularly serious problem might be the shortage of certain key goods, particularly those of a "lumpy" nature. Housing and municipal infrastructure are outstanding examples. In the section on "Action Communities", it was pointed out that the private market for housing is only a very small part of the total housing market of the pipeline region. Much of the Northern housing market depends



not on the forces of supply and demand, but on government fiscal decision making. Thus the allocation of housing and of the resources needed for that housing are fixed institutionally. Any houses that are up for bidding to the general public are quickly snapped up at a high price in the larger territorial communities. If no progress is made with respect to present housing backlogs and no significant private housing is established within the pipeline region, current problems could become greatly exacerbated during the construction phase. Rents and other housing costs could become leading factors in regional price escalations.

18. Transportation is another example of a "lumpy" commodity whose expansion takes years of pre-planning. While there is currently some slack in the Mackenzie River transport system, it is important that no complacent attitude towards future transportation capacity should be allowed to develop. Transportation for the pipeline and for all of the many other industrial uses that could coincide or overlap with it will require a very large amount of such capacity. Moreover, industrial traffic will be in a stronger position to bid for available capacity than will ordinary community resupply traffic. Care will therefore have to be taken to ensure that community resupply (which will grow substantially) is not jeopardized and that tariffs do not get out of line to the point of inhibiting normal regional economic functions. The problem is not dissimilar to that of the labour market. In transport and many other activities, the pipeline and related industrial developments will have a very large capability to command regional resources and distort price structures. This capability can be neutralized only by taking strong measures to safeguard regional interests.

19. Moreover, the transportation requirements of the pipeline should be used as a vehicle for assisting the long term development of the region. In return for the heavy use of the regional transportation system over the short term, the system and the people normally served by it should receive both short and long term benefits. The realization of such benefits will require investment capital commitments over and above the short term and longer term funding required by the Company for its own purposes. New monitoring and regulatory procedures will have to be established prior to pipeline construction to ensure that the capacity expansions and systems operations desired by the Company are undertaken in a manner which will impart as many benefits as possible to northern communities.





20. The Company should be expected to provide all facilities and equipment required to increase the regional transportation system's capacity to accomodate pipeline related traffic. The provision of such additional capital should be undertaken in a manner that would reduce the costs of serving normal traffic, and that would also improve the quality of service. Furthermore, expansion of the regional system should provide opportunities for longer term employment to northern residents in the transportation industry. Also, regionally domiciled carriers should be given an opportunity to share in pipeline related traffic, but not at an expense to the provision of more normal services.

21. In the case of the market for goods and services, the Company should expect to purchase some of its supply requirements within the Mackenzie region, but here again care would have to be taken to ensure that stocks were not depleted to a point that required residents to make special and costly arrangements to satisfy their own needs. The bulk of the goods used by the pipeline company should therefore come from sources outside of the region. Only regional stocks of goods that are clearly surplus to regional needs should be made available to the pipeline. Indeed, pipeline camps could become a market for some local foods such as reindeer and caribou meat, char and white fish, and for arts and crafts such as carvings and fur garments. Other activities that currently suffer from a lack of market demand, or from lack of being coupled with such demand, could benefit through sales of commodities to the pipeline. Examples are the small tent industry of Fort McPherson and the Fort Resolution sawmill.

22. The capital market of the pipeline region is only poorly developed at present; indeed, it is characterized much more by its gaps than by its completeness. A significant part of the new investment in the region represents risk money from the outside. Often, it enters the region during boom periods in anticipation of relatively quick pay offs. The small businessman who has established a home in the region, and has made a long term commitment to it, has a great deal of difficulty in competing with such capital. Sources of funds that are relatively well developed in the south are generally not available to him. Gaps in the regional capital market should therefore be at least "patched in" so that regional firms are able to remain competitive during the pipeline period. However, for the next several years, a proviso should be attached to loans made to regional businessmen: they should not be allowed to excessively concentrate their investment in ventures designed to take





advantage of the quick pay-off that projects such as the pipeline may generate. The principal criterion with respect to such loans should be the degree to which a businessman is investing in an activity that is tied to the longer term "normal" growth of the region.

23. With regard to the long-run development of the region, the primary stabilization problem with which the region is faced is that booms, such as the kind that the pipeline will generate, typically concentrate excessive capital in the boom sector. When the boom is over, or if it does not meet investors expectations, a general collapse can occur which has repercussions for the economy as a whole. This pattern has been particularly characteristic of the frontier.

24. Another major problem is that prolonged and severe inflation can seriously distort income patterns. In Alaska, particularly in boom communities such as Fairbanks and Valdez, present income stratification is different from that of two or three years ago. People who a few years ago were near the top of the local income scale, but who have not had direct access to money flows from the Alyeska pipeline, have dropped significantly in relative terms. Earners whose incomes are fixed by essentially non-market processes; for example civil servants can suffer serious losses of real income during inflationary periods. In contrast, the trades and professions that are able to "hook" into the main money streams of a boom may experience a substantial gain in real income. Distortions in regional wage and price patterns in Alaska have resulted in a high turnover in many lower paying public service jobs. However, it is not only that people's economic status and incomes change; at some point the whole community finds itself on a treadmill, on which, like Alice, it is required to run faster and faster just to keep up. The changing expectational patterns and social tensions that are generated by this are deeply disturbing to many people.

25. In view of much of the foregoing, a great deal will depend on the ability of government to reduce the uncontrollable effects of the pipeline on regional market forces to an absolute minimum. A "hands-off" approach to the Northern economy during the construction phase would probably generate much higher social costs in the long run than would effective (if unpopular) controls and measures such as indexing certain costs and incomes. In regional terms, the pipeline can be viewed as a sufficient emergency to justify controls. Their imposition would require the coordination and regulation of major economic entities such as



business firms, unions, and other groups with significant economic power, at least during pipeline construction.

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SPECIFIC RECOMMENDATIONS AND COMMENTS

Industrial Development -- Delta/Beaufort Region

A hypothetical scenario presented to the Inquiry suggested that the gas and oil gathering and processing facilities of the Mackenzie Delta and Beaufort Sea could at some future time become enormous in their extent and complexity, greatly interfering with land and sea animals and the annual activities of native people. While this is not intended as a comment on the particular scenario in question, it nevertheless follows that unless a great deal of thought is given to the location and construction of gas and oil facilities over the entire life of the Delta/Beaufort reservoirs, there exists the possibility of a transformation that would be so massive that the end result would be totally alien and unrecognizable in terms of the present day social, economic and biological patterns of the region.

Although the following recommendations derive from evidence developed for the "Delta Phase", they should be viewed as an attempt to establish certain basic principles that should apply to the planning of all industrial development projects and sequences of projects in the North:

1. The location of gas gathering and producing facilities at the Delta/Beaufort area should be concentrated in a very few areas, and if feasible, at or near the sites of Mackenzie Delta gas gathering facilities that are currently under construction.
2. Great care must be taken to ensure that any prospective facilities would not interfere with resource harvesting activities of native people beyond the point of absolute necessity. Principles of compensation for encroachments on native lands must be firmly established. Areas that are important animal habitats from both a conservation and resource use standpoint must be carefully delineated and avoided.
3. Native people must have a decision making input into the location of gas gathering and processing facilities. If it were proposed to build facilities at locations other than those which are now planned, native people should have the right to veto the Company's prime location site, provided that agreement can be reached on an alternative site which





would ensure less interference with their ability to derive a livelihood from the land.

4. Studies should begin in the near future on the location of suitable sites for all future on-shore facilities, for gathering line corridors, etc. The sites selected should be chosen from the point of view of minimizing the interference of industrial facilities with the use of the renewable resource base. There is a great danger in proceeding with the planning and construction of facilities in a piecemeal fashion, and without an overall plan that is designed to ensure that an adequate variety of land uses are protected, particularly uses such as renewable resource harvesting and conservation.
5. Impact studies undertaken with regard to proposed projects must have input at all stages from concerned residents and other groups with legitimate interests; the studies must focus on the overall cumulative effect of development, not only on the impact of the individual project. To ensure that a particular project (or sequence of projects) is given study from all relevant points of view, appropriate interests must be funded adequately to undertake a separate study parallel to the official study undertaken by government. Such funding must be sufficient to provide for publication of results. Periodically, a special fund must be established for this purpose.
6. Impact studies being undertaken by government must be conducted openly. Researchers and administrators must be accessible to the interested public. One principle that should be made firmly part of the practice of government is that local people who will be affected by development have the right to full knowledge about its probable scope and impact.

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Native Input to Political and Administrative Processes

Native people have to date had little input into the decisions that have shaped the events that are inducing major social and economic changes in the Greater Pipeline Impact Region. Such input is essential because the region is their homeland, and because they comprise a majority of its residents. Native people have held many seats on the Council of the Northwest Territories, but the ability of this body to exercise any real influence on major events affecting the territories is open to question. There are very few native people holding key administrative posts in the government of the Northwest Territories, even though the territorial administration makes decisions that affect them daily. Similarly, there is no perceptible native presence among the public servants at the federal level who will make decisions concerning the pipeline, a project which will have a large impact on the native people.

1. It is recommended that important top-level positions in the territorial governments should be held by competent and interested native people. Recruitment of people to fill these jobs should begin within the next year. In filling them should be much more important that prospective incumbents have a genuine understanding of the values and processes of native life, and of the aspirations of native people, than that they possess academic qualifications and experience developed for participation in a non-native society. It is considered that, in all but the most technically sophisticated positions, experience can be gained on the job, if necessary with assistance from temporary back-up advisory staff.
2. It is recommended that recruitment of native people proceed until the composition of the administrative hierarchy of the Government of the Northwest Territories is at least approximately reflective of the territorial population as a whole.
3. Since Canadian dependence on energy resources in northern areas inhabited by native and northern people will increase, native and non-native northerners who are aware of the potential costs of such projects to their societies should be placed on the tribunals that consider such projects. They should also be placed in positions in the upper ranks of the federal departments that participate in the planning of projects such as the Mackenzie Valley pipeline.





Authority of Local Governments

Under the philosophy of local government that is being applied in the Northwest Territories and Yukon, the responsibility that a community may exercise over matters that affect it is directly related to its property tax base. Thus, being in charge of one's own affairs is equated with being able to pay one's own way. Many small native communities that have no tax base have virtually no powers to influence events that could have a real bearing on their future. Considerable evidence was presented to the Inquiry that this is not a tenable situation.

During the pipeline construction and post-construction period, a native community should be able to participate in, and make, many decisions that are important to its continued life. To provide for this (and, in the event that there is no land settlement,) some rationale other than one based on property taxation will have to be used for giving communities the necessary decision-making authority. One possibility is that such authority could be founded on the wealth embodied in the land, or "zone of influence", around the particular community. Thus, important events could be viewed as adding to or subtracting from the value of the wealth these lands represent, thereby giving the community a legitimate right to make decisions about these events.

While this concept has merely been put forward for consideration, it might be referred to some group for further study, for example, the committee proposed under "Organization of Local Government" in the section on "Action Communities".



## Regional Economic Planning

It is considered that much attention will have to be given to the question of regional economic planning to avoid serious misalignments between the supply and demand of resources and productive capacity. A second objective of such planning would be that of ensuring that the growth of the Greater Pipeline Impact Region is compatible with regional aspirations and consistent with national objectives. In carrying out their work, planners would have to give much attention to the preservation of the basic dual character of the northern economy and society. The following recommendations are made in this regard:

1. The regional planning program now underway within the Department of Indian Affairs and Northern Development and the Government of the Northwest Territories should be continued and expanded. There should be a stronger planning capability at both the federal and territorial level. The "Authority" that was proposed earlier in this document will also need a planning capability. Obviously, a great deal of thought will have to be given to the coordination of these various planning groups.
2. The various regional planning groups together should formulate a set of goals and objectives for regional development and indicate the various paths by which these might be achieved. However, none of these goals or objectives should be accepted without thorough public discussion.
3. Basic to effective planning is forecasting, which is very difficult to undertake for the northern territories because very high levels of uncertainty prevail there. It is recommended that an independent authority such as the Economic Council of Canada be given responsibility for the preparation of five and ten year forecasts of activity in the Northwest and the Yukon Territories in order to provide planners, administrators, businessmen and others with a basis for making decisions.
4. A critical problem to which regional planning should give attention is devising a method of providing a continual inventory of regional resources and productive capacity. The methodology of such an inventory is not a simple matter, and



a great deal of thought would have to be given to working it out.

5. While the present recommendations have focused on matters relating to economic planning, no such planning should be undertaken unless it is coordinated with other aspects of planning such as land use planning and any planning undertaken by native organizations following a settlement of land claims. In other words, planning should not be viewed as a fragmented, parcelled exercise but as one that is fully consistent among its various branches, and with processes such as policy formulation, administration and the implementation of programs.





## Bunching of Projects

During the peak construction period, a substantial number of projects in addition to the pipeline will occur in the Greater Pipeline Impact Region. Many of these will be related to the pipeline, but some others may be quite independent of it -- e.g., the provision of community infrastructure that would have been needed in any event. It will be impossible to prevent all of these projects from coinciding or overlapping, but some attempt should be made to spread them out and to postpone such projects as can be delayed. This is being proposed because the pipeline and gas field development will already result in extraordinary activity levels and everything possible should be done to prevent additional strains on regional resources and productive capacity.

1. It is recommended that all construction projects that public and private agencies are contemplating in the Greater Pipeline Impact Region be inventoried with attention to variables such as cost, size, duration, timing, use of local and regional resources, likely effect on employment, probable transportation requirements, etc. Much of this data will be of a highly tentative nature but some record should nevertheless be obtained because of its importance for planning purposes.
2. It is recommended that such data be collected by the federal government, perhaps using the resources of the ACND, and that it be made available to whatever machinery is established to undertake monitoring and regional planning.
3. It is recommended that the federal government (perhaps the ACND) and the monitoring Authority, once established, should assess the proposed projects from the point of view of whether they will cumulatively place an excessive strain on the resources of the regional economy. This assessment should lead to the development of a schedule for the proposed projects that is optimal in terms of both regional resources and demands such as the pipeline.
4. It is recommended that this plan be implemented after it is thoroughly reviewed with the public and private agencies that would be affected by it.

The first part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present. The author then goes on to discuss the role of the federal government in the development of the country. He argues that the federal government has played a crucial role in the development of the United States, and that it is essential for the country to continue to have a strong federal government.

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## Regional Wage Levels

An increase in the geographic mobility of labour within the pipeline impact region is desirable in some respects. However, an excessive mobility in response to locational differences in wage rates would be undesirable in terms of the stability and continuity of business firms which are important to the economic functioning of the region. A firm that is not able to exploit the main money flows produced by the pipeline and related projects might face high labour turnover, plus wage demands that it could not hope to meet. A policy of not discouraging, but rather dampening, the mobility of labour is therefore suggested.

1. It is recommended that, during the period of peak pipeline construction, the wages and other costs of selected key local firms should be subsidized as necessary in order to enable these firms to remain in business. This subsidy could be provided as already recommended in other sections of this submission (viz. Northern Business).
2. It is recommended that the allocation of funds for this purpose be the responsibility of the Authority described in the "Basic Issues" section of this submission, and that the source of such funds be part of overall impact funding which would ultimately be paid for by the Company.
3. It is recommended that outlays from this fund should be restricted to only those firms that are deemed to be essential to the continued economic stability and growth of a particular community. The selection of firms meeting the above criterion could be part of the responsibility of the committee recommended for establishment under Regulation of Business, in the "Northern Business" section.
4. It is recommended that applications for subsidies be initially scrutinized by the committee referred to, or to another established for the purpose. Final decisions on which firms are to be subsidized must rest with the Authority, however.



5. Care would have to be taken to ensure that the subsidized firms earned only a normal return on their investment -- i.e. that the final result of subsidizing labour costs was to hold down prices that regional consumers paid for goods and services and not to inflate the profits of entrepreneurs. The Authority would be responsible for the necessary monitoring.





## Indexing of Incomes

A project as large as the Mackenzie Valley Pipeline would probably have some inflationary effects at the national level. However, given the small size of the regional market of the Greater Pipeline Impact Region, prices and incomes there could rise significantly more rapidly than in the country as a whole, particularly during the construction period. Many people living in the region depend heavily on transfer payments, the levels of which are nationally determined and hence would not likely rise as rapidly as regional costs and prices. Moreover, many of these people might not be able to more than marginally tap into pipeline generated income streams. There is a danger that their incomes would fall behind in both relative and absolute terms. Relatively, regional residents that had access to pipeline money flows would be better off than people who did not. Absolutely, the people relying on transfer payments and other types of fixed income could sustain serious losses in real terms.

1. It is recommended that suitable, regionally applicable indexing procedures be worked out to compensate people on relatively fixed incomes for losses due to regional cost and price increases that exceed national increases.
2. It is recommended that such an indexing program should be of strictly limited duration; that is, it should be continued only until the pipeline has been completed and pipeline induced local inflationary effects have tapered off.
3. It is recommended that the "Authority" should work out the indexing procedures and undertake the necessary administration.



## Regional Transport Infrastructure

Both Foothills and CAGPL have indicated that they will make extensive use of existing wharves, highways and airstrips. Both recognize that such facilities will have to be upgraded and expanded. In addition both have indicated that additional wharves and storage areas will be required. CAGPL also intends to construct a number of new airstrips while Foothills will depend primarily on new helicopter pads.

1. It is recommended that during the pipeline construction period, community resupply traffic should be treated as priority traffic wherever facilities are jointly used.
2. It is recommended that wherever the Company requires joint use with a community of an existing transport facility such as a wharf, storage area, or airstrip and the facility needs to be upgraded and/or expanded to accommodate pipeline related traffic, the Company should be required to purchase the facility from the present owner at a negotiated price. Funds provided in this manner should be applied to community infrastructure needed to improve local access to the facility, which could become inhibited by pipeline access needs.
3. It is recommended that, notwithstanding any outlays by the Company, any such jointly used facilities should be open to normal non-pipeline traffic at whatever normal charges are applicable. There is to be no displacement of normal operating and maintenance personnel.
4. It is recommended that the Company should undertake the upgrading and/or expansion of joint use facilities to a high standard. That is, adequate capital must be sunk in the facility to ensure that long run maintenance costs are minimized.
5. It is recommended that in carrying out any upgrading or expansion, the Company be cognizant of long term community needs. The design and construction of all upgrading and expansion should be undertaken in a manner which will allow the facility to be readily scaled down after pipeline construction. The facility which remains to serve the continuing needs of the community should include a high



component of sunk costs in order to minimize annual maintenance.

6. It is recommended that, when the pipeline construction period ends, the upgraded and/or expanded facility should revert back to the original owner at no additional cost to him and in a condition that will not require excessive long term maintenance. The Company should be responsible for bearing the costs of any capacity that is in excess of the needs of the community; that is, of any capacity that derived from the needs of the pipeline project.

TRANSCRIPT REFERENCES

CAGPL	O'Rourke, Dau, Williams, Vol. 33,34,37,38,39; O'Rourke, Vol. 52, 53; Trusty, Vol. 162
Foothills	Mirosh, Hushion, Vol. 67, 68
MVPI	Merrett, Pritchard, Vol. 178; Hagglund, Hawryszko, Prefontaine, Leblanc, Evans, Vol. 191
Substantial community hearing materials.	





Additions to Transport Fleets

Pipeline related transportation will require additions to equipment fleets. The acquisition of additional equipment to meet pipeline needs should not pose a problem in respect to highway, air and rail transport. However, tugs and barges designed and constructed for use on the Mackenzie River are highly specialized and, insofar as they had been built for the pipeline, finding some alternative use for them after the project was completed could prove very difficult.

1. It is recommended that Northern Transportation Company be responsible for all water transport needs of the applicant. N.T.C.L. can then subcontract to other water carriers.
2. It is recommended that additions to the tug and barge fleet required for pipeline construction be amortized over the life of the construction period, with no provision for salvage value.
3. It is recommended that the Company be assessed the full cost of the amortization either as a lump sum payment to the water carrier or as a surcharge on tariffs applied to its traffic.
4. It is recommended that all modes operating within the regional transport system should treat community resupply and normal passenger traffic as priority traffic. That is, such traffic will have first call on available space, and carrier scheduling will be dictated by community supply and passenger needs.



## Pricing of Transport Services

The cost of transport to the user is heavily influenced by the costs incurred by the carrier in serving traffic. Carrier costs result from: equipment cost, terminal cost, labour cost, operating characteristics, and short and long-term variations in traffic. Pipeline related traffic will have an influence on all these factors. Procedures must be established to ensure that the influence of the pipeline on carrier costs is not reflected in increased user charges for normal resupply and passenger traffic.

1. It is recommended that a freeze on rates applicable to normal resupply and passenger traffic should be instituted before pipeline construction begins. A date such as the issuance of a Certificate of Convenience and Necessity could mark the beginning of the freeze.
2. It is recommended that any additional costs that carriers incur because of the pipeline and related projects should be considered as the responsibility of the Pipeline Company. The recovery of the additional costs must in no way be built into user charges on normal traffic.
3. It is recommended that the pricing of community transport must not be allowed to curtail the supply of transport services for community resupply purposes. During pipeline construction, normal traffic must be given priority service at the lower of either the rate which existed prior to construction or the rate available to pipeline traffic.
4. It is recommended that the rate freeze should be reviewed after construction is completed. Any subsequent rate increases must be predicated on general rate increases for southern Canada. No "catch-up" in rates that would reflect increases that had taken place while the pipeline was under construction should be allowed.
5. It is recommended that the Company should provide long-term funding for post construction carrier operating losses due to lasting pipeline induced cost inflation.



### Entry of New Carriers

It is recommended that communities should not be subject to a decrease in service levels either during or after pipeline construction. Entry of transport operators into the regional transportation system should be justified on the basis that they would provide service to pipeline related traffic in situations where existing carriers could only provide service to the Company by withdrawing normal service to territorial residents. In other words, existing carriers must primarily serve community needs and if there is a shortfall in transport supply, then it must be the needs of the pipeline project and related developments that will not be met until additional capacity is provided via means such as the entry of new transport firms.





Communications - Construction Phase Demands

Neither Applicant has as yet accurately defined his total requirements for communications services, particularly with respect to the additional load which will be imposed on the public communications system during the construction phase. In this phase, services will be required by the Company's staff, by the various sub-contractors and by camp personnel and crews. For example, there will be a need for approximately seven pay-phones per camp.

1. It is recommended that the Company should finalize and accurately define its total maximum requirements for the construction phase as early as possible. The Company should then, as early as possible, communicate this information to the common carrier or group of carriers respectively, so that the additional equipment required to augment the capacity of the system will be on hand in advance. Sufficient lead time is required so that equipment can be installed prior to commencement of construction, to avoid any severe early overloading of the public system.
2. It is recommended that the Company should complete its contract arrangements with the carriers well in advance of commencement of the project, so that excess channels available from the leased satellite transponder may be made available to the common carrier to ease any initial overload.
3. It is recommended that the common carrier, in consultation with government agencies and with action communities, obtain a reasonable forecast of the extent of additional services which will be required due to induced government and business activity, construction of gas plant and feeder lines, and population increases. This would enable the common carrier to ensure that adequate communications services will be available for non-pipeline users in advance of a build-up of demand.



Communications - Community Concerns

Communities in the region complain of inadequate communications facilities with respect to a variety of services: lack of basic telephone or radio communication between communities, lack of radio programs providing information on northern affairs, and the southern-oriented content of most TV programs. There have also been requests for mobile systems to enable hunters and trappers to communicate with home settlements.

1. It is recommended that CNT should expedite extension of adequate telephone services to all communities well in advance of demands for pipeline services, so that community services are not relegated to a low priority position which could make them unavailable until the pressures of pipeline construction and induced demands had levelled off.
2. It is recommended that, through its regulatory powers, the federal government should ensure that capital costs incurred as a result of the pipeline project and related activities are not passed on to the general public through increases in rates or by other means such as government grants or subsidies.



## Effect of Construction Schedule on Logistics and Transport

In terms of present transport demand a three year pipelaying period would mean that the regional transport system would have to accommodate three times the volume of current traffic for each of the pipelaying years. If pipe were laid over a two year period, the combination of normal and pipeline related demand would mean that the regional system would have to accommodate four times the volume of current traffic in each of the two years. If pipelaying were undertaken over a five year period, total demand on the regional system for each of the five years would be about twice that which exists today. This does not take into account other large scale traffic demands such as those originating with Delta/Beaufort hydrocarbon development.

On the positive side, pipeline related transport demand will increase short run employment opportunities for residents, utilize surplus transport capacity which now exists, and improve short run profitability for transport operators. On the negative side, the massive short term increase in transport demand will require additional transport capacity that will largely be redundant in the long term, cause competition between normal and pipeline demand for scarce transport resources and create problems of congestion within the regional system.

Shortening of construction would only serve to make undesirable impacts more pronounced, particularly as employment opportunities for northern residents would be reduced in terms of duration. Based on the application, it is presumed that the Company will undertake a three year pipelaying program.

The most likely event requiring contingency programs relative to pipeline related transport is considered to be the possibility of slippage in the scheduling of the proposed three year program. Should a slippage occur, pressures on sub-contractors and the Company could influence them to attempt to abandon measures designed to promote involvement of local labour, measures designed to protect the transport needs of territorial residents and other guideline restrictions. Authorities should be aware of these possible pressures where departures from schedules are unavoidable to ensure that the interests of territorial residents are protected.





## Stability and Growth

1. It is recommended that, in its monitoring role, the Authority should carefully balance the respective needs of regional residents and the Company in considering the latter's requests for altered arrangements that may arise because of inadequate pre-planning or a slippage of schedules. To the maximum possible degree, the needs of residents shall take precedence over those of the Company when it becomes necessary to reconsider the terms under which a right-of-way permit has been issued.
2. It is recommended that procedures be established to ensure that any necessary departure from initial schedules will not reduce local employment and sub-contracting in transport and that previously agreed to salaries and wages shall be paid.
3. It is recommended that in any situation where the Company and/or its subcontractors require unplanned-for transport resources, and the use of such resources (to compensate for departures from the initial schedule) means withdrawal of transport services from territorial residents, the Company should be responsible for the full cost of providing emergency back-up transportation services to communities. The replacement emergency services (e.g. air to replace water transport) are to be provided through a government agency or crown corporation such as the Authority or NTCL.







## CHAPTER 2

### PROTECTION OF ENVIRONMENT AND LAND





PROTECTION OF THE ENVIRONMENT

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WILDLIFE PROTECTION

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TERRESTRIAL AND AQUATIC MAMMALS



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## INTRODUCTION

Concerns and recommendations relating to a number of terrestrial and aquatic species are considered in this section. Because many of the smaller mammals utilize only small home ranges and have relatively rapid reproduction potential, the small mammals such as insectivores (shrews) and rodents (lemmings, mice, squirrels, moles) are not discussed. The white whale is included because of the potential impact on their calving and nursing areas.(Cross-Delta route).

The welfare of the terrestrial and aquatic mammals depends on four basic requirements. In the long and short term the most significant requirement of all species is the maintenance of habitat quality. Other requirements include prevention of heavy mortality of individual animals (through hunting and access restrictions, reducing traffic/wildlife interaction) to protect local breeding populations; prevention of disturbances which may interfere with local breeding success or cause habitat abandonment; and the prevention of creation of physical barriers (e.g. snow fences, unburied pipe, long open trenches) that may interfere with migratory patterns.

The need for protection of quality habitat areas is critical to every species especially in the case of denning species such as foxes and bears. To a large degree denning sites are also prime development areas as they offer drier, more stable construction terrain and are often prime borrow material sites. In the case of aquatic furbearers, such as muskrat and beaver, the maintenance of stable water levels and prevention of water pollution are the most critical factors to their continued well-being.

Direct mortality to animals can occur in a variety of ways. vehicles moving along the pipeline right-of-way may collide with animals such as caribou, wolves or moose. This may occur on access or other roads, such as the Dempster Highway, which will have large traffic volumes as a result of project supply requirements. Indirect mortality to various animals may also be induced by the project. Very little is known, for instance, about the changes in predation patterns on caribou or moose by predators gaining easier access to wintering ranges through the use of cleared pipeline rights-of-way.

The prevention of disturbance is potentially one of the greatest needs in protecting the welfare of many species. Much has been said throughout the Inquiry about the critical energy balance of species like caribou during various life history phases. Human activity disturbing wildlife populations, causing unnecessary energy loss, should be regulated to avoid areas and periods of



critical importance to those populations. Den sites are critical for the reproduction of bear, wolf and fox and pipeline activities should be scheduled and routed to minimize adverse disturbance affects on these sites. Caribou breeding and wintering areas are located in areas of potential conflict with pipeline development. Much can be done to minimize these conflicts through scheduling and routing. Other species, such as Dall sheep, muskoxen and white whales may also be subjected to disturbances within their restricted range.

Concerns for aquatic furbearers have not been examined in detail. The aquatic furbearers, while being locally vulnerable to changes in water levels or quality, have a rapid recovery potential. They reproduce rapidly and can recolonize disturbed habitats which have not been permanently spoiled. Because of these adaptive features there need not be a long-term concern for their welfare as long as short-term habitat damage is corrected. As emphasized in other sections of this report, aquatic resources are the subject of a wide range of concerns (including blasting, oil spills etc.), which may significantly affect the aquatic furbearers. The welfare of the aquatic furbearers will largely be protected by the implementation of these recommendations.

However, in areas where there has been traditional harvesting of aquatic furbearers, the short term, local depletion may significantly affect the economic well-being of local trappers. In such cases compensation programs will have to be developed.





## CARIBOU AND REINDEER

### GENERAL RECOMMENDATION

The Company shall design and carry out construction, operational and related activities in such a way that impact on caribou and reindeer is minimized. Particular care should be taken to avoid disturbance in migration routes and critical seasonal ranges. The government should ensure that the potential for greatly increased access to caribou concentrations, and resultant increases in hunting, does not exert long-term pressures on populations that cannot be sustained.

### DISCUSSION

#### General Range Requirements

Presently proposed pipeline routings through the northern Yukon and Mackenzie Valley would pass through the ranges of two major barren-ground caribou populations and the Reindeer Grazing Preserve. Other petroleum industry activities, such as gas wells, feeder lines and processing plants would also have an impact on caribou and reindeer populations in these regions.

Both the Porcupine and Bluenose caribou herds are migratory, that is they make distinct seasonal movements to take advantage of a wide range of habitats and environmental conditions. Typically these seasonal movements follow well defined general patterns, but areas, particularly winter ranges, show considerable year to year variations. It is probable that poorly understood environmental stimuli are a factor in this variable range utilization. However, this wide ranging use of habitat areas does not reduce the importance of any particular area within the range. All areas utilized are integral to the total range requirements of the herds. Removal, by any cause, of any part of the total range could significantly contribute to a reduced herd viability.



### Porcupine Herd

Currently numbering in excess of 100,000 animals, this international population is the fourth largest herd of migratory caribou in North America. The herd ranges over 80,000-90,000 square miles in the Northwest Territories, Yukon Territory and State of Alaska. It is one of the greatest wildlife phenomena in North America.

Each year the herd calves in a traditional 4,000 square mile area on the coastal plain and foothills of northern Yukon and Alaska (between the Babbage and Canning Rivers), then spends the summer in more mountainous regions of northern Yukon and Alaska. Winters are spent further inland in the Yukon, Alaska and to a lesser extent in the Northwest Territories, in the Ogilvie Mountains, Porcupine Plateau, Eagle Plains, the east side of the Richardson Mountains and the drainages of the Chandalar River. Not all of these areas are utilized in any one year however.

North-south migrations between the calving grounds/summer range and the winter ranges occur in spring (April and May) and fall (September through November). These migrations vary considerably by dates, routes and patterns, but certain routes and river crossings are frequently used. The beginning of the fall migration, often triggered by the first heavy snowfall, can vary by weeks from year to year. A year of low snow accumulation may allow much wider distribution and movements within winter ranges, and coupled with an early spring may initiate an earlier than normal start to spring migration.

The areas used as summer and winter ranges illustrate a high degree of traditional use while the annual variations in use patterns demonstrate the wide variety of habitat conditions available to, and necessary for, the survival of caribou in the harsh northern environment. Within the herd's total range the calving ground and post-calving areas represent the greatest degree of traditional use. Each year, in late May and early June, virtually all breeding cows in the population converge on the North Slope from widely dispersed winter ranges. After calving, the entire population concentrates in foothills and plateaus adjacent to the North Slope to escape insect hordes.



The Porcupine caribou herd is a classic example of adaptation to survival in a rigorous environment. Its ability to use a variety of habitat types keyed to a great variability in climatic conditions has facilitated its survival in this severe and pristine region. Experience in other parts of North America, Europe and Asia has shown that modification of any element in the life cycle of such a herd can lead to a rapid reduction in its viability.

#### Bluenose Herd and Reindeer

Population parameters of caribou living east of the Mackenzie River are less well understood than those in the Yukon. The Bluenose herd, which populates the general area east of the Mackenzie and north of Great Bear Lake, is the subject of a current study by the Canadian Wildlife Service, and few results are available to date.

The Bluenose herd was estimated to number about 100,000 animals in 1976, up from the 1966 estimate of approximately 50,000. Associated with this increase in total numbers has been an expansion of range utilization. These caribou apparently migrate westward to spend the winter in forested regions near the Mackenzie River. In recent years there has been westward expansion of this range toward the Mackenzie River and the Delta. Traditional winter range on the east side of the river between Fort Good Hope and Travaillant Lake is now apparently used more heavily, and in recent years animals have wintered in abundance north and west of Travaillant Lake. In 1974 the number wintering between the Arctic Gas Coastal Cross-Delta route and the Coastal Circum-Delta route was estimated at 10,000-30,000 animals.

Reindeer are herded in the Richards Island-Tuk Peninsula region. Unherded reindeer are similar to other caribou, and since the Bluenose herd, in winter, occupies closely related and proximal areas, reindeer are considered, for convenience, as other caribou except when specifically noted.





Concerns

A. Habitat

The pipeline right-of-way with all associated facilities on the Coastal route would occupy a total of only 16 of the 4000 square mile Porcupine caribou herd calving area in northern Yukon and Alaska. On the interior route the loss of this herd's winter range would be an even smaller proportion of the total 6,000 square miles of winter range. Thus, habitat loss alone through actual clearing of right-of-way and related facility sites is not expected to have a significant impact on the Porcupine herd. Similarly, with winter construction and use of snow roads, restriction of aircraft and vehicles during construction and adequate drainage designs, the amount of habitat lost should be insignificant to the total available range to the Porcupine caribou.

Large scale loss of caribou winter range from wildfires associated with pipeline activities is possible. Increased surveillance of the area, improved communications and access could contribute to a reduction of total acreage burned. Critical wildlife habitat should be given a higher priority rating for fire suppression activity than is now the case.

If sour gas were ever brought into production in the Delta (to date there has been no such plans) the sulphur dioxide produced could greatly reduce the caribou range since it is toxic to lichen forage.

B. Barriers to Migration

A number of pipeline related activities could constitute a physical barrier to caribou movements. An operating spread, complete with open ditch, strung pipe and operating equipment could cause a formidable barrier to a migrating herd. A well travelled highway or haul road could likewise become a significant barrier. Snow fences in unbroken lines perpendicular to the migration path, deep-drifted snow associated with roads or fences and steep road embankments are examples of other features which could be serious barriers to caribou movements. Also, the possible barrier of elevated portions of the pipeline and feeder lines cannot be overlooked.



The possible effects of such barriers on caribou vary from minor diversions in line of travel to delay in herd movement, possible increased exposure to hunters and predators in unsuitable habitat, and possible abandonment of part or all of a traditional range area. It has been well documented in Scandinavia and Alaska that facilities such as highways and railways do not in themselves cause reindeer or caribou to abandon ranges. In conjunction with heavy traffic, however, and particularly hunting (see Section on "Wildlife Management and Monitoring"), ranges are abandoned, with the inevitable result that the population declines drastically.

During construction, the period when migration barriers are most likely to be a problem, it should be possible to avoid most contact with the migrating caribou by careful scheduling (including contingency planning) and continuous monitoring of migration progress. Despite extensive annual changes in the use of various seasonal ranges and in the routes used to travel between them, large numbers of traditionally used sites, such as river crossings, allow certain migration predictions to be made.

### C. Disturbance

The Porcupine caribou herd lives on ranges which, until very recently, were isolated from the influence of European man. The intrusion of man and his machines pose the greatest threat to the herd. They will cause behavioural or physiological changes in individual animals or groups of caribou. These effects range from slight energy expenditure due to momentary excitation to massive energy loss due to wild escape reactions during a period when the animals may be under severe stress from other factors (cold, snow, heat, insects, pregnancy, lactation, antler growth, rut etc.).

A most critical life history period for caribou is during calving and post-calving when the animals congregate on the North Slope. The post-calving period, when the animals are concentrated in large herds to avoid the summer insect hordes is a particularly critical period. Any disturbance of animals travelling to the calving ground, on the calving ground, or during fly-time could cause heavy direct or indirect mortality of calves and adults. Continued disturbance during these periods could cause the herd to desert large areas of vital habitat and bring about a significant reduction in the viability of the population.



Caribou are particularly susceptible to disturbance from low flying aircraft. The effect is increased with larger aircraft and is particularly disturbing with helicopters. Caribou are more easily disturbed in forest cover than on open tundra, and large aggregations are especially sensitive to aircraft disturbance. In worst cases caribou panic and flee wildly, stumbling and bumping into one another. Such a mêlée causes, among other things, direct mortality or injury; calf-cow separation thus increasing calf mortality; severe energy loss and physiological imbalance in a period when animals may be severely stressed by other conditions. It also increases vulnerability to predation. Because of these potentially serious effects, use of aircraft should be tightly regulated over critical areas of caribou range.

#### D. Direct Mortality

The proposed pipeline has the potential for causing a decline in the Porcupine herd. It appears that the indirect long term factors may have the most damaging consequences. There are, however, several direct mortality factors which would, in worst case situations, have significant effects on the herd. These include caribou falling into an open trench during construction; collisions between caribou and vehicles on roads; stampedes on the calving grounds caused by human presence, blasting or aircraft disturbance, increased hunting of caribou because of increased access provided by the pipeline project etc. (see "Wildlife Management and Monitoring").

#### RECOMMENDATIONS; the company

1. The Company shall schedule construction and all other activities associated with the project so that contact with and disturbance to groups of migrating caribou, or groups of pregnant or nursing cows, are minimized. To this end the Company shall prepare detailed schedules, including contingency plans, to handle annual variations in chronology and patterns of caribou migration and occupation of calving and post-calving grounds. These schedules shall be reviewed for approval, by the Agency, prior to the final granting of approval to proceed with construction.





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2. The Company shall not undertake any construction activity on the pipeline right-of-way in areas of the Yukon Coastal Plain calving and post-calving areas, during periods which could provide disturbance to caribou.

Comment: The sensitive periods are generally between May 20 to July 15. The Agency may permit some activities at specific sites provided that the activity and their support services do not provide disturbance to nearby caribou.

3. Prior to and during construction, the Company shall maintain a biological monitoring program to define the seasonal distribution and day-to-day location changes of caribou during critical periods. This monitoring will form the basis of Company contingency plans to safeguard the well-being of caribou.
4. The Company shall submit for Agency approval, measures that will prevent caribou from being obstructed or entrapped by project related activities.

Comment: These measures may include :

- (a) construction scheduling to minimize the time lapse between trenching and backfilling;
  - (b) construction of earthen plugs in open trenches to permit animal passage across and escape from the trench; and
  - (c) skewing or stacking of the pipe deposited along the right-of-way to provide free movement of animals..
5. Upon the approach of concentrations of caribou the Company shall immediately initiate measures which assure minimal disturbance and interference with caribou movement.

Comment: Measures may include backfilling parts of the trench, moving pipe strung out along the right-of-way, shutting down certain operations that may cause disturbance etc..

6. The Company shall design maintain roadways so that free and easy passage of caribou is assured. Snow control and clearing techniques should be such that long stretches of



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unbroken snowfence and deep drifts or snowbanks caused by snowfence or road clearing do not impede caribou movements. Snowfencing shall be removed in spring prior to the arrival of caribou.

7. To minimize aircraft disturbance to caribou during sensitive periods the Company shall control flying heights and frequency of project related air traffic over critical caribou calving, post-calving or other concentrations (see "Aircraft Control"). Minimum aircraft altitudes of 2,500 feet above ground are needed for adequate protection sensitive caribou concentrations.

Comment: Aircraft movements over occupied caribou winter range should be confined to flight corridors corresponding, wherever possible, to the right-of-way or access roads.

8. The Company shall regulate the aerial revegetation programs in the Northern Yukon in a manner that avoids caribou calving and post-calving concentrations (see also "Aircraft Control").
9. The Company shall develop contingency plans for the suppression of fires that show a high priority for fire control in critical caribou wildlife habitats.

RECOMMENDATIONS: THE GOVERNMENT

11. The government should develop a traffic management plan for the Dempster and other rights-of-way in important caribou areas which cedes the right-of-way to caribou. When caribou are present in such areas, suitably slow speed limits, convoying or staggered scheduling of highway traffic and periodic closures of highway sections experiencing large scale caribou crossings should be instituted.
12. The Agency should assure that the design and maintenance proposals for project rights-of-way assure free and easy passage of caribou (see also Recommendation 6 above).
13. The government should develop aircraft control mechanisms for all flights in the Northern Yukon to minimize disturbance to caribou during sensitive periods (also see "Aircraft Control").



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## MOOSE

### GENERAL RECOMMENDATION

The Company shall conduct all construction operations and other activities in such a way that impact to moose populations is minimized.

### DISCUSSION

Economically moose are one of the more important wildlife species in the North. The death of moose around settlements attest to their heavy utilization in the more accessible areas. While moose range widely over most habitat types in summer, they are greatly confined to a few favourable locations in winter and early spring. During the latter periods disturbance could result in depletion of populations.

Serious disturbances of moose habitat would not occur if pipeline alignment and facilities avoid vital moose wintering areas in river valleys. Some disruption of normal movements across the Mackenzie Valley would occur if lengthy stretches of open trench or similar obstacles are encountered. Moose are particularly sensitive to airborne or terrestrial disturbances in winter. Aircraft at low altitudes, and especially helicopters, create a panic response in moose, and can stress an animal during a period when environmental factors may also be causing stress.

Of greatest concern for moose along the proposed pipeline is the potential for improved human access to moose habitat. In addition there may be an increased demand for hunting privileges of the species during the period of pipeline construction. These two concerns, coupled with the relative ease of locally depleting moose populations, could have significant impacts on the resource.

### RECOMMENDATIONS: THE COMPANY

14. The Company shall, when locating the right-of-way and ancillary facilities (e.g. haul roads, borrow sites, stockpiles, airfields and wharves) avoid significant alterations to class 1 moose habitat areas and especially to critical moose wintering areas (Prescot et al., 1973).



15. The Company shall institute construction and operation measures which minimize disruption to the normal movements of moose.

Comment: Such measures as the location of earthen plugs across the trench at regular intervals to facilitate moose crossing or escape from the trench and skewing to the trench or tandem stacking of pipe strung out along the right-of-way to provide unobstructed access across the right-of-way may form part of these measures.

16. The Company shall restrict access and minimize disturbance to critical moose wintering.

Comment: Measures to minimize disturbance such as restricting aircraft overflights as described above for caribou should apply.

#### SOURCES OF INFORMATION

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PAAG Chapter 9

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GRIZZLY, POLAR AND BLACK BEARS

GENERAL RECOMMENDATION

The Company shall conduct all field activities in such a way as to minimize impacts on bears. Every effort should be taken to avoid attracting bears to activity centres.

DISCUSSION

A prime concern for the bear species is the prevention of interaction with man. Traditionally bears have been persecuted whenever these interactions have appeared to pose a threat to human safety. This is despite the fact that, through improper waste management man has provided the bait which originally attracts the animal. The bears become habituated to the bait and more aggressive in searching it out.

Such interaction with man is only one aspect in the survival potential of grizzlies and polar bears. The conservation of their occupied winter denning sites is critical. Any activity which results in the winter disturbance and abandonment of a den may lead to the death from exposure of the affected bear. Harassment, especially from airplanes, can also be very detrimental. Bears can expend vast amounts of energy trying to evade the airborne intruder. This loss of stored energy may be crucial to the bears' survival over the winter. Death from physical exhaustion may result from frequent or extended periods of harassment.

Grizzlies are hunted for trophy and as food for native people in both the Yukon and Northwest Territories. Pearson (1976) has expressed concern about the combined factors of increased access, sport hunting and the inadequate legislative protection for female animals. Currently only females with cubs are protected. Since adult sows are accompanied by cubs only 2 out of 3 years, and since guides traditionally re-visit terrain in which grizzlies have been previously observed, in the third year the female (which is rather sedentary within her range) becomes very susceptible to sport hunters. Pearson (1976) has suggested the following changes to increase the protection of grizzlies in areas newly opened to hunting:



- (a) the areas should be opened for only two or three years and then closed for an equivalent period of time;
- (b) a national bag limit should be established so that each hunter is permitted to kill only one grizzly every five years;
- (c) grizzly trophy seals be mandatory throughout Canada (NWT does not currently have this requirement) and should be obtained prior to the initiation of the hunt; and
- (d) international law should apply to the handling of trophy hides to ensure that taxidermists are deterred from handling an untagged or unsealed hide.

RECOMMENDATIONS: THE COMPANY

- 17. Prior to final design the Company shall identify grizzly and polar bear den sites within 1/2 mile of the right-of-way and pipeline related facilities. This survey should be repeated before construction begins.
- 18. To prevent disturbance to denning grizzly and polar bears, the Company shall not undertake construction activities, especially blasting, within 500 yards of occupied grizzly and polar bear dens, except as approved by the Agency.
- 19. The Company shall institute measures to ensure that:
  - a) low-flying do not harass grizzly, polar and black bears; and
  - b) man-bear conflict encounters are minimized.

Comment: Feeding of bears should be viewed as an act that threatens human life. The Company should insist that any person feeding bears should be immediately dismissed.

- 21. The Company shall collect and incinerate domestic waste (see "Solid Wastes: Camps and Facilities") to prevent attraction of bears to construction sites and facilities.
- 22. The Company shall take measures to restrict access by bears to all areas containing domestic waste. Access shall also be





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suitably restricted to fuel storage areas when flexible-walled storage bladders (which can be ruptured by bears) are used.

23. The Company shall assure that each working unit (survey crew, right-of-way clearing crew etc.) likely to encounter bears is knowledgeable in the use of and is equipped with approved scare devices to discourage bears from visiting centres of human activity. Each such group should be equipped with only one sealed firearm for use only in the event there is a real and immediate threat to human safety from a bear. Each firing of a sealed firearm should be reported. Firearms so fired must be re-sealed without delay by an authorized government representative of the Agency.
24. The Company shall immediately report to the Agency any bear considered a nuisance or posing a threat to human safety.

Comment: Only government representatives will have the authority to dispatch animals. This action would be one of last resort after all alternatives have been exhausted.

RECOMMENDATIONS: THE GOVERNMENT

25. The government should pass legislation forbidding the feeding of bears.

Comment: The legislation should provide for prosecution of persons or companies who, through negligency or otherwise, provide bears with an opportunity to become habituated to waste material. Strict measures should be included for individuals who feed bears (fines, dismissal, jail terms etc.).

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- 1976 Habitat, management and the future of Canada's grizzly bears; Presented to Canada's Threatened Species and Habitats, CNF Symposium (unpublished).

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- 1975 The distribution and abundance of polar bears in the eastern Beaufort Sea; Beaufort Sea Technical Report No.2; DOE.

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DALL SHEEP

GENERAL RECOMMENDATION

Company activities in close proximity to occupied sheep range shall be carried out in a manner that does not unduly disturb the sheep. This shall particularly apply to aircraft overflights of occupied ranges.

DISCUSSION

Kucera, Nolan and Kelsall, and Watson et al have presented background information on the Dall sheep populations likely to be exposed to pipeline construction activities in the Mackenzie Valley and northern Yukon. Dall sheep populations in these areas are not likely to be greatly or directly affected by pipeline activities. They are, with one exception, largely beyond the direct influence of the project.

The pipeline route avoids sheep habitat throughout the upper reaches of the Mackenzie Valley. North of the proposed crossing of the Mackenzie near Fort McPherson, where two possible routes were defined, some potential conflicts could occur. The Interior route, which would cross the Richardson Mountains near the Stony Creek-Rat River pass, encounters only marginal sheep range. The Circum-Delta route follows a narrow corridor between the Richardson Mountains and the Mackenzie Delta, passing within two miles of an important Dall sheep wintering and lambing area in the vicinity of Mount Goodenough. No direct destruction of sheep habitat seems likely as a result of pipeline construction but activities associated with both construction and maintenance of the pipeline, particularly flying, would be detrimental to the sheep populations. There is also concern for a small group of sheep in the Firth River area of the British Mountains. That group is not near a pipeline route but it is on a natural aircraft flight corridor through the mountains that would be heavily used if the coastal route were selected.

Except for aircraft there is not a great deal of concern about the direct effects of pipeline construction on sheep. Adherence to scheduling which avoids activities at critical lambing and wintering periods, or route selection to avoid mineral licks should minimize potential impacts on the species.





However, there is a major concern for minimizing human access to sheep habitat and for preventing increased harvest facilitated by increased access. Nolan and Kelsall suggested that the annual harvest of Dall sheep (about 50 [Kucera]) appears to be dangerously close to, or even exceed, annual increment in the Mount Goodenough population. Geist suggested that sheep are unable to distinguish between a man with and a man without a gun. Thus, hunting pressure and increased human access could combine in a synergistic way magnify disturbance effects, possibly culminating in abandonment of traditional range. This problem would be most severe if traditional lambing areas, wintering range or mineral licks were involved.

Geist and McTaggart-Cowan have said that sheep are adaptable to a wide range of human activities, including noise disturbance other than that caused by aircraft, provided the animals have sufficient time to adapt to a gradual escalation of the activities. The sheep must not, however, associate the presence of man with an immediate threat to their well-being. To accomplish this conditioning in potential conflict areas the Company should be prepared to schedule construction related activities to effect a gradual build-up. In addition, Company personnel should be absolutely prohibited from firearm discharge and hunting in these same areas. Further, a complete closure on sheep hunting seasons and human access may be justified in areas of conflict prior to, during, and for 2-5 years following initial pipeline construction to allow the sheep to become better accommodated to human activities.

#### RECOMMENDATIONS: THE COMPANY

26. The Company shall obtain site specific Agency approval for borrow pit operations and blasting to be undertaken within 2 miles of occupied sheep range at critical times (ie. wintering, lambing and mineral lick areas). Requests for this approval shall demonstrate that scheduling and other mitigative measures have provided adequate disturbance protection to the sheep and that the necessary access or haul roads will not increase human access to sheep concentration areas.
27. The Company shall not construct airstrips or helicopter pads within 2 miles of critical sheep range. (see also "Aircraft Control").



28. The Company shall ensure that all project-related aircraft flights abide by minimum heights and over-flight restrictions issued by the Agency and designed to avoid disturbance of Dall sheep in critical habitat at sensitive times.

Comment: In order to adequately protect sheep during the sensitive winter and lambing periods, aircraft should avoid critical habitat by a horizontal distance of 2 miles and any necessary overflights should maintain above-ground altitudes of at least 2,500 feet.

29. Permanent and temporary pipeline facilities shall not be located within 2 miles of critical sheep habitat unless the Company can demonstrate that the construction and operation of the facility will not adversely affect the Dall sheep population in the area.

RECOMMENDATIONS: THE GOVERNMENT

30. If a permit is issued for a gas pipeline along the cross-delta route, the government should restrict hunting and access within the range of the Mount Goodenough Dall sheep population during and after construction of the pipeline (see "Wildlife Management and Monitoring" and Land Reserves").

SOURCES OF INFORMATION

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MUSKOXEN

GENERAL RECOMMENDATION

The Company shall minimize disturbance to muskoxen.

DISCUSSION

There are two small groups of muskoxen of about six animals each near the Firth and Blow Rivers. These animals apparently originated from those in Alaska and appear to be attempting to re-inhabit areas from which they had been earlier extirpated.

Muskoxen in both the Yukon and Northwest Territories have been listed, for management purposes, as being "in danger of becoming extinct" (NWT Act PC 1960-1256, Yukon Act, PC 1969-2089). This legislation enables the territories to create hunting regulations uniformly applicable to all people but does not classify the species as "endangered".

Harassment of muskoxen leading to flight of the animals is the major pipeline related concern. Most reports state muskoxen react strongly against human incursions. Muskoxen are adversely affected by harassment of low flying aircraft, especially by buzzing and circling helicopters or fixed-wing aircraft.

It is also possible that open pipeline trenches may be a hazard or a physical barrier to muskoxen.

RECOMMENDATIONS: THE COMPANY

31. The Company shall to develop specific contingency plans to deal with potential encounters with muskoxen during winter construction on the Yukon Coastal Plain.

Comment: These should include methods of herding muskoxen away from construction areas. Each encounter with muskoxen should be reported to the Agency and such reports should include details on means of displacement if necessary.



32. The Company shall institute aircraft control mechanisms and construction practices for muskoxen and their habitat areas similar to those for caribou and other mammals as specified in this section.

#### SOURCES OF INFORMATION

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## ARCTIC AND COLORED FOXES

### GENERAL RECOMMENDATION

The Company shall take measures to ensure minimal destruction of fox denning habitat and minimal disturbance to foxes during all phases of the project. Particular care should be taken to prevent foxes becoming habituated to unnatural food sources.

### DISCUSSION

The pipeline route areas west of the Mackenzie River do not appear to support a large arctic fox population. Ruttan (1974) located 50 arctic fox den sites throughout the Yukon Coastal Plain and Herschel Island and identified other potential denning areas. The Delta region is a relatively poor area for den sites because of the traditional spring flood conditions. While some arctic fox utilize the Richards Island area, their main concentration appears to be south of Herschel Island between the Firth and Spring Rivers and on Herschel Island itself. Colored foxes are found throughout the Yukon and Northwest Territories.

There is not a large concern for direct impact of a pipeline on arctic or colored foxes. Surveys to date suggest that there are few den sites situated on the proposed pipeline right-of-way. In the case of arctic foxes, den site occupation begins in early May and can extend to early August. However, as winter construction of the pipeline is proposed these den sites will not be occupied.

Extraction of granular material for pipeline construction could result in habitat degradation by reducing the number of den sites. Arctic foxes traditionally utilize den site areas and thus it is necessary that such areas be avoided as sources of borrow material.

Arctic and colored foxes are easily tamed and could easily be attracted to campsites by hand-outs. This situation inevitably leads to problems around the camp and usually to the destruction of the fox. Feeding of foxes, as with other wildlife is, to the uninformed, a seemingly harmless act that only proper education and enforcement can control.





RECOMMENDATIONS: THE COMPANY

33. Prior to final design, the Company shall identify all arctic and colored fox den sites within 1/2 mile of the boundaries of the right-of-way, borrow sites and other facilities (including access and haul roads). Construction and related activities should not come within 100 yards of prime denning areas unless authorized by the Agency.
34. The company shall ensure that measures are implemented on site that will prevent harassment and feeding of foxes.
35. The Company shall manage all domestic and other waste products in a manner that precludes attraction of foxes to construction sites and facilities. Fox-proof fencing should be installed around incinerator, food storage and domestic waste handling areas (see also "Solid Wastes: Camps and Facilities").
36. The Company shall take preventive measures, such as erection of fencing, to prevent foxes from establishing den sites under buildings or in stockpile or other facility areas.

RECOMMENDATIONS: THE GOVERNMENT

37. The government should enact legislation that would make the feeding of foxes an offence subject to severe penalties.

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## WHITE WHALES

### GENERAL RECOMMENDATION

The Company shall avoid disturbance of white (beluga) whales during all construction, operation and related phases of the project.

The Government should designate a whale sanctuary in Mackenzie and Shallow Bays so that developmental activity would be excluded from that area used by calving and nursing whales.

### DISCUSSION

The western portions of the Mackenzie River estuary, particularly Mackenzie, Shallow and Shoalwater Bays, are important nursing and rearing areas for white whales. Upwards of 4,000 white whales utilize these waters from June to August -- the time of arrival depending on the ice conditions. The warm shallow waters and plentiful food sources provide ideal habitat for the cows with young calves.

The proposed gas pipeline is a potential disturbance to these marine mammals. Large amounts of supplies and equipment for construction in the delta area will be moved through the Mackenzie Bay from Alaska and brought down the Mackenzie River on ships and barges. The disturbance of whales, in the West Mackenzie Bay area, from this increased water-based transport during the summer, could result from the increased noise and possible oil or chemical spills from these vessels. Summer construction of the proposed Cross-Delta pipeline may cause further harassment of the white whales. Installation of the pipeline, underwater blasting, the presence of barges, air cushion and other construction related transportation vehicles in the area, could disturb nursing whales. Air cushion vehicles are especially disturbing to white whales. Noise usually frightens the whales into deeper water thereby affecting calves which need shallow, warm water for surface breathing and maintenance of body heat.

Accidental oil spills from ships or construction activities would probably not affect mature white whales since they are able to move away from oil slicks. Calves near or at the surface, however, may come in contact with surface pollutants. The consequences of such contacts are not known.





White whales are an extremely important component of the arctic ecosystem. They are an important food source for local people: 170-200 whales are taken annually at local hunting camps. While Bliss (1976) considers this to be within the range of sustainable yield for the local population there does not appear to be much margin for additional losses due to mortality or reproductive failures resulting from other causes.

Beyond the actual construction of the pipeline, the construction of artificial offshore drilling islands, gas collector systems and processing plants may contribute to the environmental hazards (e.g. petroleum or chemical spills) likely to affect the species. Sergeant and Hoek (1976), in summarizing their concerns for the species state:

"...the population of white whale which calves in the Mackenzie is virtually the whole of the population in the Beaufort Sea. We postulate that simultaneous oil and gas activities throughout the whole Delta in July each year could so disturb the whale herd that they would be unable to reproduce successfully. In time, the herd would die out. If we wish to maintain the herd, we must initiate measures now (e.g. establish a special reserve for calving whales) which we can be certain will allow its successful reproduction annually."

#### RECOMMENDATIONS: THE COMPANY

38. If the Company is to build a pipeline along the cross-delta route, its crossing of shallow Bay shall avoid the white whale sanctuary (see below).
39. Preferably, the Company should move its Shallow Bay crossing to a position entirely south of the area utilized by white whales (for example, the "Barry Route", Exhibit 457).
40. If the route is not so relocated, construction of the crossing or other activities disturbing to whales should avoid the entire period when whales are present in the Shallow Bay/Mackenzie Bay area.



Comment: In view of the overlap of the period of concern for whales and the periods of concern for waterfowl and particularly staging snow geese, winter construction of such a crossing is environmentally preferable and warrants study by the Company as an alternative to the present proposal for summer construction.

41. The Company shall not use air cushion vehicles during the summer months (approximately 1 June to 31 August) near areas utilized by white whales for calving and nursing.

#### RECOMMENDATIONS: THE GOVERNMENT

42. The Government should establish shipping corridors through areas utilized by white whales.
43. If a cross delta pipeline is selected, the Government should require that the routing of such a crossing be relocated to a more environmentally acceptable area (e.g. the route proposed by Barry, Exhibit 457) or that construction be undertaken during periods when both whales and birds are absent from the area.
44. The Government should create a reserve or sanctuary to protect white whale habitat in the West Mackenzie Bay/Shallow Bay area.

Comment: This reserve should be totally free from all disturbance, including hunting, construction of artificial inlands and other petroleum-related facilities and pipelines. The area of this reserve should coincide with the area occupied by the main mass of white whales found in the western area of the Mackenzie estuary in most years.

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Wildlife Protection  
Mammals

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## BIRDS

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Wildlife Protection  
Birds

GENERAL RECOMMENDATION

The Company shall protect all birds and their habitat from adverse effects associated with the construction, operation and maintenance of the pipeline. In particular, the Company shall avoid disturbing raptor sites and important areas for waterfowl migration, nesting, feeding, moulting and staging.

The government should identify important and restricted ornithological areas and periods, particularly for raptors and waterfowl such as geese, and develop and impose special restrictions on access and aircraft activities in such areas.

DISCUSSION

Introduction

At least 230 species of birds in 41 families have been reported as nesters, migrants or casual visitors in the general area of the proposed pipeline. The degree of impact that the pipeline will have on these bird species will vary widely because of their variations in spatial or temporal distribution, density, behaviour, habitat requirements and sensitivity to disturbance.

Several of these species are not traditionally found in the project area. They may simply be transients or accidental visitors. Many other species are continental in distribution, so the proportion of their total population vulnerable to pipeline-related impact is small. In some cases, however, species are particularly vulnerable to pipeline construction and operation because of low or declining continental and/or regional numbers, or because significant proportions of their total population gather within the project area at some stage of their life history. For other species, a significant portion of their remaining viable nesting or other critical habitat occurs in the region of the proposed pipeline.

While it is recognized that each of the 230 species which occur in the area represents a vital component in a diverse, integrated ecosystem, only raptors such as golden eagles, bald eagles, ospreys, gyrfalcons and peregrine falcons, and water-oriented birds such as swans, geese, ducks and other sea birds have been considered in these recommendations. The raptor populations of the Mackenzie Valley and northern Yukon represent significant portions of their entire remaining North American populations.



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This is especially true of the peregrine falcon and gyrfalcon while the golden eagle, bald eagle and osprey are still quite numerous in other regions of this continent. Although peregrine populations have been thoroughly inventoried and critical nesting areas identified, other raptor species have not been subjected to the same detailed inventory. In general none of these bird species are present in large numbers. In recent decades a number of factors have combined to greatly reduce the abundance of the peregrines throughout the North.

Eagles and ospreys first arrive in the North as early as March; peregrines in April. Gyrfalcons, which do not migrate long distances, may be present in project areas all winter. All raptors occupy territories centred around traditional nest sites soon after their arrival (gyrfalcons may be present on that territory as early as January).

The Mackenzie Valley constitutes an important natural migration route for many birds which breed in the western Arctic and sub-arctic. During May and early June the only available open water for large numbers of migrating waterfowl is on the Mackenzie River islands, from Camsell Bend to the delta, and some of the lakes adjacent to the river. These waters are heavily utilized for nesting, feeding and mating. As many as 200,000 northbound geese and swans may concentrate on sandbars, spits and island fringes. These same areas also provide vital fall migration resting areas in years when young birds have been unable, for some reason, to attain adequate energy reserves to complete the southward migration in long, uninterrupted segments.

Large numbers of ducks, with some Canada geese, sandhill cranes, loons, and shorebirds, nest in the boreal forest and forest-tundra habitats of the Mackenzie Valley. The Ramparts River, Mackay Creek, Great Bear-Loche River, Mills Lake and Beaver Lake areas are the most important nesting, brood rearing, moulting and staging areas of water-oriented birds in the Mackenzie Valley between Great Slave Lake and the delta.

The Mackenzie Delta itself is one of the most important waterfowl production areas of North America, with breeding populations of several hundred thousand ducks and geese. Of particular concern are the snow goose colony at Kendall Island, with 1,200 to 8,000 breeding birds, the approximately 20,000 nesting whistling swans in the Eskimo Lakes-Liverpool Bay area, and the scarce trumpeter swan which has recently been reported nesting near Moose Channel. The uncommon Hudsonian godwit does nest in portions of the delta





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and the almost extinct Eskimo curlew may still nest on the tundra east of the project area (for further discussion see "Rare and Endangered Species"). Many other parts of the delta are critical for moulting ducks and geese during summer.

The Old Crow Flats in the Yukon interior is second only to the Mackenzie Delta as a critical waterfowl production area in northwestern Canada.

The Beaufort Sea coast, particularly the Blow River-Shallow Bay area and to a lesser extent the coastal plain to Herschel Island, is also important for nesting whistling swans. Brant and many species of ducks, loons, gulls, terns and shore birds use the Beaufort Sea coastal lagoons, beaches and islands as resting, nesting and later moulting areas. From June through August the tundra lakes of the Yukon Coastal Plain are important nesting, feeding, brood rearing and moulting areas for a number of species of swans, geese, ducks, loons and shore birds. The tundra area near the Firth and Babbage Rivers may also be the centre of the nesting range of the uncommon buff-breasted sandpiper (for further discussion see "Rare and Endangered Species").

In the late summer and autumn, 3-500,000 geese, swans and ducks gather on the Yukon Coastal Plain and Shallow Bay for a period of concentrated feeding to build up energy reserves for the long southward migration. Snow geese are the major waterfowl present during this period and on any particular day in late August, almost the entire Western Arctic population might be gathered on the coastal plain between Bathurst Peninsula and the Canning River in Alaska.

### Habitat Alteration

Inadequate design and construction of the pipeline could cause serious wetland habitat degradation. Trenching in wetland areas of inadequate stream crossings, for example, could cause draining or drowning of waterfowl habitat. Excess siltation from stream crossings and/or approaches to watercourses, could degrade waterfowl habitat and food sources. A flow restriction on a river which is frequented by spring migrating waterfowl could alter water levels and cause a loss of limited, essential resting and feeding habitat. Many of the tributaries of the Mackenzie River present this type of essential habitat at their confluence with the Mackenzie. These tributaries open earlier than the main river



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and, laden with a rich food supply, attract large concentrations of spring waterfowl.

The riparian margins of many northern lakes, rivers and streams constitute essential waterfowl nesting and escape habitat which could be seriously altered or eradicated by fire. Similarly the winter draw-down of lakes for water needed for ice road construction and pipe testing could degrade the waterfowl habitat values of waterbodies which lack the ability to recharge themselves.

The islands of the Mackenzie River serve as resting, feeding and mating areas for large numbers of spring migrant waterfowl. Removal of gravel from these critical waterfowl sites for construction purposes could make these areas unsuitable for use by migrating birds. Similarly, essential coastal Beaufort Sea waterfowl moulting and staging areas could be rendered valueless for large populations of waterfowl by the removal of granular material or by construction of a coastal transportation system which involved inter-connection of sandbars.

A primary concern for the preservation of raptor populations is the physical preservation of individual nest sites. Raptor breeding success depends upon particular nest site requirements. Irregularly occupied nest sites are as important as those which are regularly occupied since the availability of alternate sites may be the key to future rehabilitation of populations of raptorial birds in North America.

### Contamination of Birds and Habitat with Toxic Chemicals, Oil and Fuel

In the past few years numerous petro-chemical spills have occurred at barge, storage tank, equipment and waste disposal sites. Many of these spills have occurred as a result of human carelessness, poor planning and engineering deficiencies. Some of the fuel spills have had a considerable impact on local wildlife and habitat values. The relatively low frequency of such events, and the limited awareness for environmental values in the past has resulted in little more than local concern.

The magnitude of the activity which would accompany pipeline construction would be much greater than anything in past northern experience. Only the highest operational and safety procedures and standards will prevent future spills whose cumulative impact



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could cause large scale habitat destruction and wildlife mortality. This is especially true for ice covered habitat. The use of oil dispersants, themselves more toxic than oil, in oil clean-up procedures would be of particular concern (see "Spill Prevention and Control").

While the problems of offshore drilling are perhaps somewhat beyond the scope of this present evaluation, it is worth remembering the concerns of scientists about the seriousness and duration of impact of offshore spills to the wildlife populations of the region. Oil well blowouts, particularly at offshore sites, represent a major threat to wildlife populations in the delta and on the Yukon coast. Various scenarios of the possible consequences of a Beaufort Sea blowout have been presented at the Inquiry.

Arctic Gas proposes to pressure test its pipeline using a water-methanol mixture requiring approximately one million gallons of methanol per construction spread. Disposal or accidental spillage of methanol into watercourses or lakes could affect bird populations through disruption of aquatic food chains. Strict operational and safety procedures and standards for the transportation, handling, storage and disposal of test fluids will be necessary to minimize their spillage into aquatic ecosystems.

### Disturbance: General Considerations

The maintenance of wilderness aspect within critical distances of raptor nest sites is of paramount importance. During the period of territorial occupation, raptors are extremely sensitive to disturbance. Disturbance could cause direct mortality of the eggs or young through exposure, predation or accidental ejection of egg or chick from the nest, or it could reduce the wilderness seclusion of the area surrounding the nest to the point that the site is no longer acceptable to the breeding pair.

This latter consequence is often the result of low-intensity, repeated disturbance over a period of time. In such cases, each incidence of disturbance may itself seem minor but the cumulative effect of a series of these minor disturbances may be enough to cause the birds to permanently desert the nest site.

Little is known about the tolerance of various raptor species to low intensity, cumulative disturbances, but it is known that once







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this critical tolerance threshold is exceeded, some species may abandon traditional nest sites. In the absence of concrete data upon which to base decisions, the only alternative is the establishment of a buffer zone around each nest wide enough to ensure minimal disturbance.

With regard to waterfowl, various forms of disturbance will be a significant potential source of impact on populations along the proposed pipeline route throughout the survey, construction, operation and abandonment phases of the project. Disturbance could increase stress and/or alter normal behavioural patterns during critical life history periods (migration, nesting, moulting or staging for fall migration); decrease reproductive success; or cause birds to desert traditional areas (e.g. nesting, moulting or staging sites) for which there may be no alternatives.

The short arctic summer demands precise scheduling of breeding activity to produce healthy young before the onset of winter. Because of climatic and food supply limitations there is only a narrow time frame in which each phase of the breeding cycle can be completed. Because of this critical timing, disturbances can be very serious to the continued well-being of many northern nesting bird populations. Potential major sources of disturbance throughout pipeline survey, construction, and maintenance phases are unregulated aircraft overflights, various construction and operational activities, uncontrolled human access to critical habitat sites, and water traffic.

### Aircraft Disturbance

Aircraft traffic associated with large scale activity could have major seasonal impacts on waterfowl and raptorial bird populations. The degree of aircraft disturbance susceptibility varies between species, seasons and locations. The potential for disturbance of all birds by uncontrolled aircraft is seen as one of the most serious hazards associated with the pipeline and other petroleum-related activities.

It is worth noting that raptors are known to strongly protect the airspace around their nest site, even from aircraft. Incidents of eagles attacking aircraft in defence of their nest have been reported. Since these birds can fly as fast as some light aircraft and helicopters, and may dive at these aircraft from



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several thousand feet, there is a real danger to human life when aircraft approach aeries.

As previously mentioned, many hundreds of thousands of geese, swans and ducks gather in the late summer and early fall, on the Yukon Coastal Plain to build up energy reserves for their southern migration. On any particular day in late August almost the entire Western Arctic population of snow geese may gather between Bathurst Peninsula and the Canning River in Alaska. The few weeks that snow geese are gathered on the Yukon Coastal Plain to feed are vital to successful completion of migration, and a serious disturbance at this point could result in heavy mortality, particularly among young of the year, on the southward migration.

During this period, snow geese are particularly sensitive to disturbance. It has been demonstrated that staging snow geese are visibly disturbed by overflying aircraft even at great altitude. Overflights at 10,000 feet in a single engine, light aircraft disturbed all the geese on staging areas and flushed some flocks as far as nine miles.

Disturbance From Human Presence, Pipeline Construction  
and Operation

Substantial numbers of logistics and construction personnel will be present at wharf, stockpile and compressor station sites during the open water seasons. The amount of disturbance to local bird populations at a given facility is dependent on the type and frequency of disturbance emanating from the site, the surrounding vegetation and topography, and the mobility of disturbance factors at the site.

The location of pipeline facilities and ground-based activities is critical to raptors and colonial nesting birds. Any source of disturbance immediately adjacent to these birds' nest areas could have a major impact. Both groups are particularly sensitive to human presence during nesting and brood-rearing. Unrestricted human access to nesting areas could result in reduced species reproduction at the site of disturbance. Geese, which are extremely wary, could be expected to vacate an area of up to 5 miles from any source of disturbance. Impact of stationary sources of disturbance on other nesting birds would be less direct or obvious. Although many tundra nesting birds are widely



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dispersed, the number of individuals affected may be large, depending on surrounding vegetation and topography.

Compressor stations pose particular concerns when located near sensitive wildlife areas. Research commissioned by the Applicants has suggested that the station noise can have significant effects on bird populations. Geese vacated a feeding area within 1.5 miles around a compressor simulator with a noise level of 50 dBA at 1,000 feet, and it was suggested that a level of 56 dBA at 1,000 feet might cause geese to vacate an area of 2.5 miles' radius. Extensive observations of geese at the drilling of the original Imperial Oil gas well at Taglu suggested that staging geese would vacate an area of 5-10 miles' radius around a compressor station, depending on the degree of aircraft disturbance associated with the site.

#### Disturbance From Water Traffic

The Mackenzie River has been heavily used for barging freight for many years. Although river traffic has increased considerably in the past few years the effects of barge-related sound and visual disturbance or human presence on bird populations have not been investigated. Waterfowl do not heavily use the Mackenzie River or main delta channels except during their spring migration prior to the normal start of barge traffic, and during fall migration, in those years when young geese and swans may be weak from inadequate energy build-ups, island complexes in the Mackenzie River may provide extremely important resting and feeding areas. Fall staging of diving ducks in the Beaver and Mills Lakes areas may be disturbed by increased barge traffic. Proposed dredging of the Mackenzie in this area could significantly affect the staging waterfowl.

The effects of increased river traffic on raptor nesting areas (e.g. near the Ramparts) are unknown; however, the effects of uncontrolled human disturbance could be devastating.

Waterfowl disturbance, resulting from increased barge traffic, could reach major proportions in the Delta and on the Yukon coast. Many thousands of waterfowl require the shelter of river islands, coastal lagoons, spits and offshore islands for moulting and staging from July through September. Heavy barge traffic through the area at this period could seriously disturb these birds.





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RECOMMENDATIONS: THE COMPANY

Raptors

1. To assure incorporation of raptor concerns, especially those for peregrine falcons and gyrfalcons, the Company shall consult with the Canadian Wildlife Service (CWS) raptor biologist during all planning, design, logistics, construction and operation phases of the pipeline project.
2. In all Raptor Protection Zones identified by the government (see recommendation below) the Company shall control, restrict or otherwise alter its terrestrial and airborne activities and those of its contractors and subcontractors in such a manner as to avoid disturbance of the raptor and to conform to the directions of the CWS raptor biologist and the Agency.
3. All pipeline related activities including all forms of human access within a Raptor Protection Zone shall be covered by a separate construction application. The application shall be supported by documents, studies and site-specific plans that demonstrate that the proposed activity will not jeopardize the raptor nesting success in any way.
4. The Company shall cease all activities within designated Raptor Protection Zones during sensitive periods and no later than the first day of territorial occupation by a raptor. Activities shall not recommence until the Agency has provided written permission to continue the work.

Comment: The following general planning guidelines for sensitive periods at raptor sites may be useful.

- |   |                          |
|---|--------------------------|
| (a) Peregrine falcons:                          | April 15 to August 31    |
| (b) golden eagles, bald eagles,<br>and ospreys: | March 1 to August 31     |
| (c) gyrfalcons:                                 | February 1 to August 31. |
5. Where project activities are permitted within a Raptor Protection Zone during a time preceding the sensitive period, the Company shall be fully prepared to cease all operations and temporarily abandon all equipment as soon as the bird takes possession of the nest site.



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6. Aircraft shall maintain an altitude of at least 2,500 feet AGL while over any Raptor Protection Zone during the sensitive period. Lower level flights shall be diverted around the zone.
7. Airstrips and helicopter pads shall be located so that all approaches and take offs avoid the Raptor Protection Zones as noted.
8. Pipeline surveillance flights less than 2,500 feet AGL, helicopter landings and motorized terrestrial access for maintenance or repair shall be prohibited within a Raptor Protection Zone during the sensitive period except as specifically authorized by the Agency.
9. The Company shall prohibit blasting within any Raptor Protection Zone during the sensitive period except as authorized by the Agency. Blasting at other times of the year may be permitted where the Company demonstrates that the blasting would not damage the raptor nest site or its surroundings.
10. Barging operations and other pipeline material movement operations that infringe on any Raptor Protection Zone during the sensitive period shall be subject to site-specific limitations imposed by the Agency to limit disturbance to the raptors.

Waterfowl

11. The Company shall control, restrict and otherwise alter its terrestrial and airborne activities and those of all its contractors and subcontractors in such a manner as to avoid disturbance to waterfowl and their habitat and to comply with access and activity restrictions in important waterfowl areas defined by the Agency (see recommendation below)

Comment: Winter activities are recommended to avoid impact. Summer activities must be kept to a minimum.

12. The Company shall demonstrate that the location and noise alteration devices applicable to each compressor station site are compatible with the wildlife characteristics of the surrounding area.



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Comment: The Company should take particular note of the critical wildlife areas as outlined in recommendation 25 below. For example, the location of CA-05 and CA-06 will interfere with goose staging areas as well as a cluster of raptor nests (Poston et al, 1973, Inventory Maps). Also, noise emanating from compressor stations could pose disturbance problems if it exceeds about 50 dBA at the fence line.

13. Because of the extensive disturbance created by air cushion vehicles to waterfowl, during nesting and rearing of young, these vehicles shall be prohibited, during periods of bird presence, from within 5 miles of the critical wildlife areas discussed in recommendation 25 below.
14. Because of the potential for disturbance to staging snow geese on the Yukon North Slope from fall aerial revegetation of the right-of-way there shall be daily authorization of such activities, during this critical period (approximately August 15 to October 15), to assure that concentrations of geese are avoided.
15. The Company shall require site-specific permits prior to undertaking any activity which physically alters the terrestrial or water regime of the islands of the Mackenzie River and delta and the spits, bars and islands along the Yukon Coast. The Company shall demonstrate that the area to be utilized will not be degraded or rendered unsuitable for traditional wildlife uses.

Comment: This recommendation applies in particular to granular borrow operations in the above areas.

16. The Company shall demonstrate that waterfowl habitat values will not be adversely altered by project activities and that adequate protection and contingency plans have been developed.

Comment: This recommendation applies in particular to river crossings, water withdrawal operations, activities on wetland areas and approaches to lakes and all areas of significant riparian vegetation. Contingency plans should include fire suppression measures to protect waterfowl habitat.





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17. The Company's plans for the transportation, handling, storage and disposal of fuels, lubricants and other toxic materials shall demonstrate that wildlife protection and particularly waterfowl habitat protection are assured. Spill contingency plans shall detail methods of containment and recovery of spilled fuels and hazardous materials. The contingency plans shall demonstrate that the Company has fully considered and has the technical, logistic and financial capability to protect priority waterfowl areas such as staging, nesting and feeding etc areas (see "Spill Prevention and Control").

Comment: A spill of a fuel or other hazardous material poses a potentially catastrophic hazard to waterfowl. If such a spill were to affect extensive waterfowl habitat areas or small areas used by large numbers of birds the effect would be calamitous. As noted in "Spill Prevention and Control", current technology is not capable of cleaning up a major spill. The Company will be moving very large volumes of fuels etc. through some of the most important waterfowl habitat in North America under the most difficult logistics circumstances imaginable. There is an awesome and very real potential for accidents. The onus and responsibilities being placed on the Company are clear.

18. The use of biocides and oil dispersants shall be prohibited except with the site-specific prior written approval of the Agency.

RECOMMENDATIONS: THE GOVERNMENT

19. The government should provide optimum protection for raptorial birds by designating a Raptor Protection Zone around all regularly and irregularly occupied nests. The Raptor Protection Zone shall be approximately 2 miles in radius or as otherwise required to protect the site. In addition an inner circle of one mile radius around each nest site, especially those of peregrine falcons and gyrfalcons, shall be designated.
20. The Agency should define the period of disturbance sensitivity (based on territorial occupation) for each raptor nest site.



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21. The Agency should issue a separate construction approval imposing specific protection measures or restraints for all project activities and access within the two mile radius Raptor Protection Zone. On a site-specific basis the Agency should approve of activities within the one mile radius zone only when such activities are certain to take place at times when the raptors are not present or when detailed submissions by the Company demonstrate beyond all reasonable doubt that the activities will not jeopardize the raptors.
22. A condition that should be attached to all permit approvals and notices dealing with Raptor Protection Zones should be that all activities must cease no later than the first day of territorial occupation by a raptor and shall not recommence until the Agency provides written permission to proceed. The Agency should restrict all activities until the young have successfully fledged.
23. Before issuing construction approval for activities in a Raptor Protection Zone the Agency should ensure that all the Company's designs, schedules etc. meet the approval of the CWS raptor biologist.

Waterfowl

24. The Agency should ensure that waterfowl in the following areas are protected (as noted) from disturbance by activities associated with the pipeline during the general periods noted. Locations and times for protection will be adjusted to coincide with variations in the presence of birds.
  - (a) Critical spring migrating habitat throughout the Mackenzie Valley, its islands, tributary deltas and adjacent marshes as specified by Poston et al (1973). Bird concentration areas should be protected from any terrestrial activity likely to cause disturbance by a two mile buffer zone. The general restriction period would be from May 1 to May 31.

Comment: In addition, these areas can be essential resting sites for fall migrating geese and swans during years when marginal conditions on nesting areas have prevented young from accumulating sufficient energy reserves to make the southward migration in normal, uninterrupted stretches. Contingency plans



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Birds

should allow for predicting such use, and provide for adequate protection of birds during such periods.

- (b) Areas of concentrations of migrating, nesting, rearing, moulting and staging geese and other waterfowl on islands, coastal spits and barrier beaches of the Yukon North Slope and Mackenzie Delta. These areas should be protected as required from about May 15 to October 15.

Comment: Because of the unpredictable pattern and temporal characteristics of day-to-day or year-to-year changes, all Agency approvals of project activities in areas mentioned in (a) and (b) above should be subject to temporary suspensions to maintain these critical waterfowl areas free of disturbance during their critical life cycle periods.

- (c) Class 1 and 2 waterfowl habitat areas of the treeless portion of the Delta and Yukon Coastal Plain (see Poston et al., 1973) utilized by nesting, rearing, moulting and staging swans, geese, ducks, loons, sandhill cranes and shorebirds. Construction activities should be minimized and personnel restricted to their immediate work areas from May 15 to October 15.
- (d) Critical snow goose staging areas on the Yukon North Slope and Mackenzie Delta (see Poston et al. 1973). All construction or otherwise disturbing activity and human access should be prohibited within two miles of areas occupied by staging geese from about August 15 to October 15.

Comment: As for (b) above, the timing and boundaries of these exclusion areas should be daily or annually modified by the Agency so that they correspond to the location of the geese. The Agency may authorize "essential" activities at certain major facilities.

- (e) Class 1 and 2 waterfowl habitat areas in the Old Crow Flats (see Poston et al. 1973). Industrial activity and access restrictions should be enforced from June 1 to October 1.





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25. The government should place an immediate and high priority on the designation of air traffic flight corridors and on the designation and regulation of flight elevations over critical waterfowl habitat areas in order to ensure the least possible disturbance during sensitive periods in their life history (see "Aircraft Control").

Comment: The areas of concern (largely those areas of class 1 and 2 waterfowl habitat and critical moulting and staging areas as per Poston et al. 1973) should be listed and designated by the Agency as being activity (including aircraft overflight) restriction areas. While some of these areas are presently well known others, through continuing research, will have to be designated as their importance becomes more defined.

Presently identified, but by no means complete, critical waterfowl areas which should have aircraft restrictions are:

- a) Yukon Coastal Areas (from Herschel Island to Shallow Bay), Yukon Coastal Plain, and areas of the Yukon Interior (particularly Old Crow Flats), from May 15 to September 1 (to migration, nesting and moulting periods).
- b) Yukon Coastal Areas and Yukon Coastal Plain (from the Alaskan/Yukon boundary to Bathurst Peninsula) from August 15 to October 15, as a result of special concerns for staging waterfowl, predominantly snow geese.
- c) Mackenzie River islands and delta, from May 1 to May 31, during spring migration when waterfowl are concentrated on or near critically limited open waters.
- d) Mackenzie Valley Boreal Forest areas (class 1 and 2 waterfowl habitat from Great Slave Lake to the delta) to avoid disturbing nesting waterfowl.



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RARE AND/OR ENDANGERED SPECIES

GENERAL RECOMMENDATION

The Company shall take all the necessary precautions to afford adequate protection for rare and endangered species and their habitats in the Mackenzie Valley and Northern Yukon regions.

The government should articulate a clear and forceful policy dealing with the conservation and protection of rare and endangered species and their habitats.

DISCUSSION

Conservationists have long been concerned with the fate of species which are sufficiently limited in number or distribution to be considered rare and/or endangered. In recent years an increasing segment of the general public has come to share this concern.

In northern Canada, the peregrine falcon, golden eagle and whooping crane are the best known rare/endangered species, but other species such as the Hudsonian godwit, Eskimo curlew, and buff-breasted sandpiper are also rare and/or endangered in the western Arctic. Each of the above species historically existed in much larger populations throughout Canada but substantial reductions in previously abundant, suitable habitat have forced their present remnant Canadian populations to concentrate in the Canadian North.

While over-exploitation has greatly contributed to population declines of such species as passenger pigeon, prairie chicken, bison, muskoxen, and Eskimo curlew, this factor has not always been the sole reason for decline or eradication of species. The passenger pigeon's plight, while greatly affected by market hunting, was also sealed by the destruction of the great oak forests -- its nesting and feeding habitat. The bison, which was largely decimated by market hunters by the 1880's, then had its vast grassland habitat fenced and cultivated which further restrict the species' survival chances. The prairie chicken was very susceptible to hunters and lost its natural grassland habitats to cereal production. Some species such as the peregrine falcon have traditionally required secluded conditions for successful nesting and brood raising. The intrusions by man into this species' critical nesting areas have resulted in



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abandonment of many traditional nest sites. Only the more northerly nesting populations survive by virtue of the seclusion of their habitat.

Past experiences have indicated the factors critical to survival of an endangered species; factors which, if altered, may significantly reduce the viability of the species. In some cases preliminary management (protection) programs have been developed to mitigate further pressure upon the species concerned.

Many ecologists familiar with the pace of northern development are concerned that there may not be an opportunity to apply the lessons learned from southern mistakes. Proper environmental planning, developmental siting and scheduling should, if properly applied, allow many types of northern development without significant impact on many animal species.

A review of the Inquiry testimony has shown a number of general problems. The most notable is a lack of precise definition of terms employed when discussing rare and endangered species. It may be that the absence of an official (national or territorial) listing of rare, uncommon, peripheral and endangered species contributes to a reduction in their absolute protection.

The terms "rare" and "uncommon" are generally understood by most Canadian authorities to relate to the population numbers and spacial distribution of the species. They imply quantification but are more often than not employed strictly from a subjective base. To date there has been no Canadian attempt to distinguish species on a quantified basis similar to that discussed in the U.S. by Dyrness (1975). The synonymous terms "endangered" and "threatened" relate to the survival potential, and thereby future status of a species. As such the inherent uncertainties mitigate against quantification. These terms are therefore best designated by the opinion of experts.

Endangered species or subspecies are those whose prospects of survival are in immediate jeopardy from any or all of the following: loss or change of habitat, overexploitation, predation, competition or disease. Without human assistance through habitat protection or other management techniques, an endangered species may become extinct in a short period of time.





## Wildlife Protection Rare/Endangered Species

Rare species or subspecies, although not presently threatened with extinction, are in such small numbers throughout their range that they may be endangered if their environment deteriorates. They may be insular or otherwise reproductively isolated, or they may be relict forms with wide distribution. The species may also be forms which are seldom recorded (and may be more common than is supposed) but for which there is reasonably good evidence that numbers are low.

In the Canadian context, there is no official listing of species requiring special management or protection because of population status. There are individual species, such as the polar bear, which have international conservation programs to limit their exploitation and trade, but these programs do not necessarily reflect the species' population status within Canada. At the regional level various Canadian provinces have established lists of rare and endangered species to assist in setting priorities for species' conservation programs. This process has not been undertaken within the Yukon or Northwest Territories. There, the wildlife agencies are concerned primarily with managing game species with little or no attention paid to rare and/or endangered species. For instance, through special federal orders-in-council, muskoxen, barren-ground grizzly and others have been designated as "in danger of becoming extinct". This mechanism allows the territorial game agencies to regulate the harvest of the designated species by everyone, including native hunters, through a form of a permanently closed hunting season. In the case of migratory birds the Migratory Birds Convention Act establishes permanently closed hunting seasons for the species of concern. To date the provisions of the National Wildlife Act for establishing federal preserves have not been employed in the territories as a means of protecting critical habitat areas for species that are of national and international concern.

All rare or endangered species located North of 60°N have very specific habitat requirements. These habitats are limited in availability. Continued survival of such species depends upon preservation of the remaining habitat areas and their protection from disturbance factors which will render the sites unacceptable to the occupying species.

A number of rare or endangered species are migratory and depend upon the northern habitat sites for only a portion of the year. For these species careful scheduling of human activities to avoid





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critical periods, on a site-by-site basis, may provide significant amelioration of potential negative impacts.

However a larger question remains; that of developmental encroachment, by insignificant increments, into the wilderness areas. Unless special efforts are devoted to routing a pipeline away from important habitat areas, it is probable that later developments such as a railway, highway, looping or other pipeline construction activity, will further encroach on critical habitats. It is essential therefore that the requirements of rare and/or endangered species form an integral part of ongoing land use planning processes in the Yukon and Northwest Territories.

#### SPECIES CONCERNS

##### Peregrine Falcon

The only viable remaining Canadian peregrine population, with the exception of the Peale's peregrine on the Pacific coast, is found North of 60°N. Less than 200 individual peregrines, including 77 breeding pairs, of the two sub-species Falco peregrinus anatum and F. p. tundrius were observed in the North during 1975. Breeding failures, caused largely by accumulation of organochlorine pesticide residues which have impaired embryonic and egg shell development, as well as habitat disturbances and destruction, have been the keys to the decline of the species.

There are two basic concerns for the peregrine: the physical preservation of the individual nest sites, and the preservation of the wilderness aspect within a critical distance of regularly and irregularly occupied nest sites, hunting territories or corridors. To help ensure continuation of this wilderness aspect and to protect the sites from commercial exploitation for falconry, no public documents should detail locations of peregrine nests. Such wide knowledge could lead to higher losses of nestlings and eggs. Knowledge of nest locations would also lead to increased disturbance by naturalists and the general public, who, however well-intentioned, may approach eyries to observe or photograph the birds.



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The plight of the species is captured by Finney and Lang (1976) who state:

"the [peregrine] population is at a dangerously low level and there is no indication that [their] recovery is imminent. Due to the sensitivity of the peregrine population, developers have to face the fact that the destruction of a single nest site or interference with nesting in a single year is a serious and unacceptable impact. These constraints apply to no other bird species regularly nesting along the proposed [Foothills] pipeline corridor."

The situation is no less severe for the corridor proposed by Arctic Gas.

Eskimo Curlew

The Eskimo curlew is extremely rare and, for practical purposes, almost extinct. Formerly a very common, local summer resident in the northwest Mackenzie region and northern Alaska, this curlew was greatly depleted by overhunting during spring migration. A further complication is the difficulty in distinguishing the Eskimo curlew from the more common and larger whimbrel (Hudsonian curlew) which occupies similar habitat types. However, sporadic sightings in the Anderson River Delta and Tuk Peninsula suggest that the species still exists in small numbers.

Current oil and gas exploration and development activities are extensive over much of the reputed nesting area of this bird. It is possible that these activities have already irreparably damaged the habitat. Combined with this lack of definition of the nesting area is the lack of knowledge of the location of its South American winter range.

In view of its current endangered status, and the lack of knowledge about the species' habitat requirements, it is unlikely that anything can be done to prevent the Eskimo curlew from becoming extinct.



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Hudsonian Godwit

The Hudsonian godwit, a large shorebird, is an uncommon nester in the northwestern Arctic. Little detailed description of the nesting habits of the species is known other than that it utilizes scattered local sites in wet grassy and sedge tundra areas. One of the two major breeding regions is the northwestern Mackenzie (inner deltas of the Mackenzie and Anderson Rivers), along the Yukon coast and in the Old Crow region.

The proposed gas pipeline route does not appear to impinge on significant nesting areas of this species and until its nesting areas are delineated, specific measures for protection are difficult to formulate.

Buff-breasted Sandpiper

The rare buff-breasted sandpiper has a very confined northern breeding range. The species was locally quite abundant, in 1972, along the Firth and Babbage Rivers. There is a possibility that this region of the Yukon North Slope may be the core of the birds' breeding distribution. Other breeding areas are found on a number of islands in the Arctic archipelago.

While knowledge of the species' breeding habits and range is limited, the avoidance of pipeline related construction on dry tussock tundra areas between the Firth and Babbage Rivers should be a priority.

Whooping Crane

The whooping crane is both rare and endangered and has been the focus of much research and management in an attempt to increase both population size and number of nesting areas utilized. The historic nesting range of this migratory species has been greatly reduced by settlement throughout the prairie region. Presently only one nesting area remains in a remote part of Wood Buffalo National Park. Locations where non-breeding, immature birds (less than 5 years of age) spend the summer remain unidentified. One reliable report located a bird northwest of Great Slave Lake in the 1950's. It is not known if this area is regularly used by immature cranes but, if so, it is vulnerable to impact from pipeline laterals to communities north of Great Slave Lake. Other areas used by immature cranes may be encountered.





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Since the world population of wild breeding whooping cranes (about 32) is concentrated in the Wood Buffalo National Park area between 1 April and 31 October, it is critical that human disturbance over this area be minimized for this period. The balance of the wild population (about 18) may be encountered almost anywhere (presumably in the southern Mackenzie Valley) around or north of Wood Buffalo National Park.

RECOMMENDATIONS: THE COMPANY

1. As part of its environmental education program, the Company shall:
  - a. instruct all personnel and contractors that aircraft overflights over that part of Wood Buffalo National Park in which whooping cranes breed are to be avoided 1 April to 31 October;
  - b. remind all personnel and contractors that whooping cranes receive absolute protection under the Migratory Birds Convention Act and that hunting or harassment of this species is subject to penalization; and
  - c. encourage all personnel and contractors to report immediately the sighting of any whooping crane, Eskimo curlew or Hudsonian godwit to the Yellowknife office of the Canadian Wildlife Service.
2. With respect to the Hudsonian godwit and Eskimo curlew, whose nesting areas have not been precisely located, no specific recommendations to protect the species can be developed at this time. However, should these species be encountered during construction phases, such encounters should be reported to the Canadian Wildlife Service's Yellowknife office and the appropriate measures should be taken by the Company to avoid interference or habitat destruction.
3. With respect to the buff-breasted sandpiper, the routing of a gas pipeline along the Yukon Coastal Plain should avoid, in the Firth-Babbage Rivers area, dry tussock tundra sites which provide nest sites for the species.



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RECOMMENDATIONS: THE GOVERNMENT

4. To facilitate the orderly development of areas North of 60°N and at the same time assure the utmost protection and consideration to rare and/or endangered species, the various levels of government should:
  - a. formulate a policy presenting priorities for conservation of rare and/or endangered species;
  - b. prepare and publish a list of rare and/or endangered species (both mammals and birds) which regularly occupy habitat areas North of 60°N, and also a list of the critical habitat areas in the northern territories used by each species; and
  - c. prohibit, restrict and control all developmental activities on the critical habitat areas, in accordance with (b). Provisions of the Canada Wildlife Act or Migratory Birds Convention Act might be employed to withdraw and protect such areas.
5. To avoid disturbance of peregrine falcons, Raptor Protection Zones should be established by the government and minimum aircraft flight levels, airfield approach routes, construction and activity scheduling and route location, and pipeline surveillance methods should be instituted (see "Birds").

SOURCES OF INFORMATION

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2. Reports

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1966 The birds of Canada; Information Canada, Ottawa.

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1974 Potential impacts of the Mackenzie gas pipeline on bird populations in the Yukon and Northwest Territories; in Research Report; Environmental impact assessment of the portion of the Mackenzie gas pipeline from Alaska to Alberta; EPB.

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WILDLIFE MANAGEMENT AND MONITORING

GENERAL RECOMMENDATION

The Company shall cooperate with the government in implementing wildlife management programs in the Mackenzie Valley and the Northern Yukon.

The government should establish a well funded and comprehensive wildlife management program based on joint studies with the Company and implemented by establishing restrictions on developmental activity in certain critical areas and by controlling human access and hunting.

DISCUSSION

The need for well funded and comprehensive wildlife management and monitoring in the Mackenzie Valley and Northern Yukon has become increasingly apparent to a great many Canadians over the past years. The studies and proposals of the pipeline companies and the activities of the petroleum industry in general have awakened people living in the South to the important and unique wildlife resources of the North. The pipeline projects signify to many the first large scale intrusion of man into areas previously viewed as wilderness. There is an urgent need to effectively control the first and any subsequent developments and to carefully manage the wildlife resources if this unique natural heritage is to be preserved.

Scientific management (which involves analysis of quantitative data on the dynamic parameters of a population, and controlling harvests at a level sustainable by the population over the long term), has rarely been applied to northern wildlife populations. In the North there are rarely sufficient hard data to make procedures reliable, and total harvest levels are difficult to determine.

The recent history of the North is replete with examples of the ability of mechanized man to decimate animal populations. These include not only the well known nineteenth and early twentieth century examples such as fur seal, sea otter, baleen whales, muskoxen, and caribou, but also more modern instances of wildlife depletion by northern residents, witnessed by the wildlife vacuums surrounding all northern centres of habitation. Where abundant wildlife populations still exist in the North, it is generally due in large part to limited human access. This



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isolated position of large areas in the North is rapidly being reduced. Without corresponding large scale increases in wildlife management efforts in the North, this loss of isolation will be accompanied by rapid depletions in many animal populations.

The potential area of influence of the proposed Mackenzie Valley pipeline is very large. Add to this the large increases in human populations which will accompany the pipeline and the result is potentially greatly increased harvest pressures on many northern wildlife populations.

A large number of new programs will require rapid initiation to provide data for reliable wildlife management. Some of these, such as disturbance studies, are closely related to the pipeline proposals. Others, such as the effect of the Dempster Highway on caribou populations, or the need to accurately quantify total levels of harvesting of fish and wildlife populations in the North, are long-identified needs which the pipeline will make more acute. All emphatically reflect the great need to expand knowledge of northern wildlife populations in the face of increasing developmental activity.

Potential impact of pipeline and related activity on wildlife populations will be most intense during the construction phase, but it will not end there. Activity during the operations phase will continue to have an effect on wildlife populations. Also, some facilities developed during construction will remain in place, and the possibility that further development, such as additional highway, railway and pipeline construction, will follow, can not be ignored, especially in view of the government's "1972 Pipeline Guidelines".

Increased access to formerly isolated northern areas, allowing large numbers of hunters easy access to previously lightly hunted and little disturbed wildlife populations poses a serious threat to the continuation of viable wildlife populations in the Mackenzie Valley and Northern Yukon. For this reason, means of controlling access and regulating or restricting hunting must be developed. It will take a few years to accumulate sufficient knowledge to allow application of precise management procedures (i.e. analysis of quantitative data on dynamic parameters of a population and controlling harvests at a level sustainable by the population over the long term). Until a more representative picture of the status and population trends of northern species





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can be constructed through the analysis of sound data, broad restrictions will have to be rigorously enforced.

Any broadly based Agency created for the specific purpose of overseeing all aspects of gas pipeline construction will probably cease to exist when that construction is complete. However, the need for continued vigilance to safeguard critical areas and wildlife values will not cease with the construction phase. Provision must be made to ensure that any of the Agency's monitoring and regulatory functions are passed on to the appropriate wildlife management agencies.

Immediate studies are required which will outstrip the normal budgeting capabilities of existing wildlife management agencies. It will, thus, be necessary to supplement budgets of these agencies to a considerable degree to allow them to rapidly meet the new demands placed upon their capabilities by the pipeline project. The resources to support these new programs are the responsibility of both Government and the Company. Several existing programs establish a clear precedent for this type of cost sharing (i.e. cost recovery by the Yukon Game Branch for a modest program, starting this winter, to study effects of the Dempster Highway on caribou populations; sharing by the federal and Quebec Governments, James Bay Corp. and native corporations of the costs of a comprehensive native harvest survey).

In addition to management needs described above, there is a need for a monitoring program to avoid or mitigate direct pipeline associated impact on wildlife values during construction, and to assess total impact on wildlife resources during the operating phase.

An example is monitoring of Porcupine caribou herd distribution and movements to ensure avoidance by pipeline air and ground activity. Ongoing monitoring would allow accurate prediction of times and routes of caribou movement so that potential impact with such things as heavy ground transport or trenching activities can be avoided. Similarly, monitoring of winter range utilized by Bluenose caribou will be required to ensure that the animals are not unduly disturbed by pipeline related activities. Monitoring should also continue into the operations phase, so that any effects of pipeline operation may be quantified and the appropriate measures taken.





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Monitoring of critical raptor nest sites will be necessary to alert pipeline related operations of the arrival of birds at the site. Periodic monitoring after the arrival of the birds will also be necessary to ensure adequate protection of the sites during the entire period of territorial occupation.

A monitoring program concerning waterfowl should include a number of critical areas in the project region. Among these are the migratory resting areas associated with islands and tributary deltas along the Mackenzie River. Monitoring here should be aimed at ensuring least disturbance during spring migration when birds are present as well as those years when birds utilize these areas in fall migration because young have achieved less than the optimal degree of physical stamina. Major nesting areas, such as the Kendall Island goose colony should be monitored annually to ensure least disturbance and to document changes. Major moulting and staging areas should also be included to ensure least disturbance and to document periods and areas of utilization by bird populations.

The monitoring program should also include species such as white whales, sheep populations, musk-oxen, grizzly and polar bears where a potential impact with pipeline-related activities is envisined.

Throughout the Inquiry concern has been expressed by territorial residents for the future of aquatic furbearers in the wake of pipeline construction. Little has been said in these recommendations on that specific topic because it is felt that these species are quite adaptable to changing conditions and, as long as aquatic habitats are adequately safeguarded or rehabilitated, furbearers generally will not be greatly disturbed. However, specific instances are certain to arise where the capacity of a traditional trapping area to support fur populations will be temporarily reduced. The first priority must be to avoid areas where this might happen but when it does happen, the obvious solution is to adequately compensate the traditional users for their temporary losses.

Extensive no hunting zones around the pipeline corridor and facilities should be implemented to protect the wildlife populations from exploitation that could occur with increased access and human populations. Restrictions should act as a freeze on new harvesting until the appropriate wildlife agencies can gather sufficient knowledge to rationally manage populations.



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The restrictions would have to be cognizant of the continuing traditional use of the resources by native people.

RECOMMENDATIONS: THE COMPANY

1. The Company shall share with government the cost of the increased activities of game management agencies that will result from the project, including the cost of the new game management studies recommended in this report. An equal split of the costs is recommended.
2. The Company shall cooperate with the government in implementing a comprehensive wildlife management and monitoring scheme throughout the construction and operation of the pipeline project. In so doing the Company shall make every effort to supervise and control its employees and contractors in accordance with the objectives and intent of the governments management scheme.  
  
Comment: The Company should restrict the possession of firearms to only those persons who need them to assure protection of human life from wildlife. Also, individuals on the project should be dismissed from project employment for feeding or harrassing wildlife.
3. The Company shall adjust its pipeline routing and the location and nature of its activities to suit the critical wildlife concerns expressed by the government and these recommendations. In particular, the Company shall avoid areas such as Raptor Protection Zones, goose staging areas, caribou herds and whale nursing areas during their respective sensitive periods.
4. The Company shall limit access to its facilities to only those persons who, in the course of their employment, need to be at the site. All haul and access roads, the right-of-way and all airstrips and helipads should be considered Company controlled and closed to public access except in emergency situations, or as designated by the Agency.
5. The use of motorised vehicles such as boats, ATV's or oversnow vehicles, should not be permitted for recreational purposes on any Company controlled property. Only those vehicles owned by the Company, of which the use is entirely



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oriented towards the purpose of pipeline construction should be allowed on any Company facilities or property.

6. After pipeline construction is completed, the Company shall remove or otherwise make unusable (in an approved manner) all facilities that are not necessary to the ongoing operation of the project.

RECOMMENDATIONS: THE GOVERNMENT

General Organization

7. A Wildlife Coordinating Committee should be established immediately by government to further define wildlife management needs in the Mackenzie River Valley and the northern Yukon. The Coordinating Committee should also act as the designated body for ensuring that Cooperative Wildlife Areas herein recommended are formalized.

Comment: The Wildlife Coordinating Committee should be composed of representatives of the three agencies currently charged with wildlife management responsibilities in the North (NWT Fish and Wildlife Service, Yukon Game Branch and Canadian Wildlife Service), native organizations and the Company. The committee's responsibilities should include further refinement of management needs and study program requirements. The Committee should answer to the Agency for all projects for which special funding is approved during the active life of the Agency. Thereafter, it is recommended that the Coordinating Committee continue as an active planning body. The actual mechanics of wildlife management be left with the above mentioned agencies currently involved therein. These agencies currently possess the expertise required to address these new programs, and it will be these agencies that will be left with continuing management responsibilities once the major activity of pipeline construction is completed.







### Monitoring

8. The Agency should establish a monitoring program, funded by the Company, which monitors various wildlife species of concern within the project area, as outlined herein (caribou, raptors, waterfowl, whales, sheep, musk-oxen and bears), to minimize impact of pipeline and related activities on these wildlife populations.

### Management Studies

9. The following management studies should be initiated at the earliest possible date with funding from the government and from the Company, and channeled through the Agency to the three wildlife management agencies.

#### (a) Harvest Surveys

A Harvest survey to determine degree of total northern utilization of all species of wildlife resources is necessary for the entire project area. The survey underway in northern Quebec in association with the James Bay Project is suggested as a model.

#### (b) Disturbance Studies

Effects of various disturbance factors (aircraft, noise from fixed facilities, blasting, ground transport, watercraft etc.) on various wildlife populations should be studied in some detail to allow more precise prediction of impact on animals. Specifically, the following animal groups are identified: all species of geese, swans and eiders, with particular attention to the importance of moulting and spring and fall staging sites; all species of raptors, but particularly peregrines, to allow more precise definition of the zone of protection required and the degree with which raptors adapt to various disturbance factors; caribou, including behavioral and physiological reaction to various disturbance factors, and expansion of the modest program starting in winter 76-77 to study the combined effect of the Dempster Highway and hunting of the Porcupine caribou herd.



(c) Waterfowl Management Studies

- (i) Snow and Ross' geese have been studied in some detail in northern Canada, but white-fronted and brant are less well understood. A study of the habitat requirements of these latter two species, including numbers, areas utilized, movement patterns and impact of total harvest is necessary in order to properly assess the impact which pipeline construction and operation and increased harvest pressure will have on these goose populations in and near the project area. For white-fronted geese, a non-colonial nester, it will be necessary to first develop a technique to reliably survey potential nesting areas.
- (ii) The status of the trumpeter swan in the delta area should be investigated and appropriate measures taken to protect critical breeding areas.
- (iii) The status of the Eskimo curlew, in the delta and areas eastward, should be investigated, and appropriate measures taken to protect critical breeding areas.

(d) Mammal Management Studies

- (i) Porcupine Caribou. Initially a cooperative effort will be required to pull together all existing biological information on the herd from the files and notebooks of Alaskan, Yukon, N.W.T., CWS and Company biologists and establish a basis for adequate study of this international herd. Further study will be necessary to establish basic population parameters for use in management. Necessary types of data to reliably assess impact of pipeline construction and increased harvest possibilities should include estimates of numbers, age and sex structures, natality and mortality, predation pressures and effects of hunting. A study lasting 3-5 years of intense investigations, followed by periodic monitoring of indicator parameters to assess changes in status and health of the herd, similar in many details to that carried out on the Kaminuriak herd by Canadian



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Wildlife Service, would be most suitable. The Porcupine herd is currently being affected by the Dempster Highway to an unknown degree, and this impact will increase, whether a pipeline is constructed or not. A modest study has been initiated in 1976-77 by the Yukon Game Branch to study this impact. This study should be expanded in scope to yield comprehensive results which can be used in herd management before any negative impacts can affect the population too greatly.

- (ii) Bluenose Caribou. A population study of that group of caribou known as the Bluenose herd is currently being carried out by the Canadian Wildlife Service, and will be completed after the 1976 summer. Based on the results of that work, additional data gathering may be necessary on status, movements, herd interchanges, migratory routes, seasonal range use, conflicts with resource development activities (eg. what effects do seismic lines have on migratory movements) and harvest levels, to more fully understand this population. Actual pipeline construction and operation should affect this herd in a peripheral way only, but total petroleum and mining exploration and development to the east will have immense impacts on the herd. These should be adequately documented and interpreted.

Special Management Areas

10. To safeguard critical wildlife areas and safeguard wildlife values the government should designate the appropriate critical areas as reserved areas.

Comment: One alternative for so doing (for which a legislative framework now exists) is to designate critical wildlife habitat areas as Cooperative Wildlife Areas under the Canada Wildlife Act. Designation of an area as a Cooperative Wildlife Area involves agreement between the Canadian Wildlife Service and the appropriate Provincial or Territorial wildlife agency on the objectives and desirability of setting aside such an area, and implies that the primary purpose or use would be for wildlife research, conservation or interpretation. Other activities are not





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totally disallowed from such an area, but would be approved only if they were compatible with that primary use designation. In northern settings, such a designation would, a priori, consider traditional native uses as an integral part of the landscape and existing resource use pattern.

A Cooperative Wildlife Area in the Cambell Hills near Inuvik is very close to the final agreement stage between the governments of the NWT and Canada. Completion of this agreement is highly desirable and should be given all possible encouragement. When formalized, the Cambell Hills Cooperation Wildlife Area can serve as a model for the establishment of others in the North.

11. Subject to further consideration by the Coordinating Committee, the following areas should immediately be given provisional reserve status (see "Land Reserves"), and prior to the completion of the construction phase, should be more formally protected as Cooperative Wildlife Areas under the Canada Wildlife Act as soon as the necessary arrangements can be completed.
  - (a) The physiographic region known as the Yukon Coastal Plain as far south as the approximate 3500' elevation; included will be those portions of the Plain in Canada utilized by calving caribou and staging snow geese, as well as various wetland and coastal features of importance to nesting, moulting and staging waterfowl other than snow geese.
  - (b) The Old Crow Flats; this area represents some of the best waterfowl habitat in northern North America as well as importance to numerous other wildlife species including many furbearer species, moose and caribou.
  - (c) Mount Goodenough Dall sheep range.
  - (d) An area 2 miles in radius surrounding all peregrine falcon nest sites within the study area. Gyrfalcon and golden eagle nest sites may be considered for similar protection as well in certain circumstances.
  - (e) That area of Mackenzie Bay and Shallow Bay regularly utilized by concentrations of calving white whale.



### Hunting

12. To protect wildlife from increased exploitation via access routes opened up by the pipeline project, the Agency should designate zones of restricted hunting on either side of, and around the pipeline right-of-way, roads and facilities wherever the Agency and the respective wildlife agencies consider it necessary.

Comment: Restricted hunting zones should not be established unless the rights of native people living in nearby communities to continue to harvest renewable resources have been protected and accommodated. If continued native resource harvesting within a zone during pipeline construction posed a threat to particular species, then agreement should be obtained with native people that they curtail their activities with regard to those species and with respect to that area. In some cases, suitable alternate areas that native people would exploit might be designated, again in consultation and co-operation with the people. Only in cases of extreme danger to a particular species should the federal government exercise its powers to exclude all hunting from a particular area, and then only if adequate compensation is made to the resource harvesters that are affected.

13. The period of continuous residence required to qualify for a resident hunting license in either the Yukon or NWT should be lengthened to two years.

Comment: The lengthening of residency requirements might be controversial but it is deemed essential if the wildlife agencies are to effectively manage harvests in the face of a very large increase in population (and hence, demand).

### International Management of Porcupine Caribou Herd

14. If a permit is granted for a pipeline across the northern Yukon to carry gas from Alaska, the Government of Canada should enter into an agreement with the Government of the United States for a common policy for protection of the Porcupine caribou herd and for joint management of the herd.



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SOURCES OF INFORMATION

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AIRCRAFT CONTROL

GENERAL RECOMMENDATION

The government should regulate aircraft operation within the project area by such means as air traffic corridors, minimum flying heights and frequency scheduling to minimize disturbance to those species of wildlife which are sensitive to aircraft disturbance.

This aircraft regulation should be administered by a 'Flight Control Group' within the Agency which maintains day-to-day information on wildlife distribution movements and current knowledge of logistic needs of the Company. To increase the effectiveness of the controls, government should determine the level of disturbance to birds and mammals caused by each type of aircraft.

DISCUSSION

Throughout the preceding wildlife sections there has been pervasive concern about aircraft disturbance on wildlife, especially those migratory species for which the North Slope and Delta have special significance. Aircraft, which play a role in the Applicants' proposals, will be used for the transportation of men and materials in all stages of the construction and operation of a gas pipeline. They will be used in pre-construction surveys, for a variety of tests and studies, for construction, operation, maintenance, surveillance, monitoring, and probably for abandonment and inactivation. They will be particularly indispensable for contingencies and for facilitating emergency repairs (see "Project Operation"). Moreover, these aircraft will be both large and small, fixed and rotary-wing. Each has its own potential for disturbance.

A significant portion of the concern about aircraft disturbance stems from the unknown magnitude of impacts generated by each aircraft model. To date there has been little comparison of disturbance effects created by the many models available. It is felt that the quality of noise from any one model may be significantly different from other craft of similar capabilities. If this is the case proper aircraft selection, according to their disturbance profiles, may significantly reduce disturbance to many species.



The following sections briefly summarize many of the specific species' concerns previously discussed.

#### Winter and Spring Disturbance

Except for some tundra lakes, islands in the Mackenzie River, nest sites of rare and endangered bird species and some winter concentrations of moose, almost all the concern arising from the operation of aircraft is centred on the northern and interior Yukon and in the Mackenzie Delta. Most of this concern relates to possible aircraft disturbance in summer and fall, but some relates to the winter and early spring when sheep populations are concentrated in traditional overwintering and lambing areas; moose are concentrated on sheltered slopes and in river valleys; caribou range over large tracts of forested winter range; and some raptor species nest early. As the major construction program for the pipeline is to take place in winter, some harmful disturbance from aircraft traffic seems inevitable unless special precautions are taken. In addition there is a potential for impact if the regular low level pipeline monitoring flights are not undertaken with a view to minimizing their disturbance potential. Moreover, Dall sheep, moose and caribou could all suffer more harm from disturbance or displacement from their habitats as the winter advances, and when severe weather has physically weakened the animals, particularly pregnant females. The potential for harm increases as the winter progresses and is accompanied by an increased need for protective measures. Fortunately, however, the location of the sensitive winter-areas for Dall sheep and moose are known, and the movements of caribou herds can be monitored by aircraft (at a discrete distance). For these species in their critical habitat areas, a minimum aircraft altitude of 2,500 feet above ground level could avoid harmful disturbance.

Generally speaking, period 15 April to 31 August is critical to peregrine falcons, 1 March to 31 August for golden eagles, bald eagles and ospreys and 1 February to 31 August for gyrfalcons. Many raptors are acutely sensitive to aircraft and it is in the early part of the nesting period when most damage can be done. Fortunately, a fair number of the raptor nesting areas along and near the pipeline route are known and can therefore be avoided (see "Rare and Endangered Species" and "Birds").





Wildlife Protection  
Aircraft Control

Summer and Autumn Disturbance

Along the Yukon North Slope the operation of aircraft during the spring, summer and fall (about 15 April to 15 October) could adversely affect the calving and summer movements of caribou, the movement of grizzly bears, the lambing of Dall sheep, the nesting and staging of waterfowl, and the nesting of rare and endangered birds of prey. Most of these problems could be alleviated or perhaps eliminated by avoiding overflying concentration areas of these species and by flying higher than 2,500 feet above ground-level (AGL) during sensitive periods (5,000 feet in the case of staging snow geese).

The minimization of disturbance to wildlife by aircraft associated with the pipeline project can be effected in four general ways. First, the establishment of a minimum flight altitude of 2,500 feet AGL should be instituted over specific critical habitat areas identified by the Agency. This minimum altitude need only apply seasonally according to the presence of the concerned species. Second, the Agency should designate specific flight corridors, applicable during all seasons, to localize disturbance otherwise affecting more widely dispersed areas with sensitive wildlife values, and to provide routes of least disturbance between project facilities. Third, the proper selection of aircraft, according to their disturbance 'profiles', for utilization in various circumstances could reduce species specific disturbances. This selection, not fully operable at present because of a lack of characterization of aircraft disturbance potential, has greater potential for future operations when more is known about disturbance variability among aircraft types. Fourth, proper aircraft traffic scheduling over sensitive areas may be used to minimize disturbance. As an example it may be necessary to limit flight frequency over snow goose staging areas to a maximum of one flight per 4 hours (Gunn Exhibit 351) to allow the geese adequate recovery time between overflights.

However, limiting recommendations to the control of aircraft related to the pipeline project is not sufficient to provide the required level of protection to sensitive wildlife populations. Much traffic not related to the pipeline now exists in the North, and this will increase, with or without a pipeline. Without universally applicable flight controls, regulation of pipeline related air traffic will realize only limited gains.





Wildlife Protection  
Aircraft Control

Therefore a prime requirement of the government should be to establish the means to designate and implement such measures as flight corridors, minimum altitude over critical areas and flight periodicity, which apply to all air carriers and aircraft associated with the project. To assure compliance with these measures a comprehensive enforcement and penalty scheme will have to be developed. In due course similar measures should be applied to all aircraft, operating in the designated areas.

RECOMMENDATIONS: THE COMPANY

1. In consultation with the Agency, which will identify critical wildlife areas, the Company shall locate project airfields and orient runways so that flight approaches to landing points avoid overflights over environmentally sensitive areas. Where possible, airfields should be located three miles from sensitive areas.
2. The Company shall ensure that all project related aircraft flights during construction and operation of the pipeline conform to the minimum flight levels, overflight restrictions, corridors, and schedules required by government and/or the Agency to protect wildlife during sensitive periods.
3. The Company shall restrict the landing of float-equipped aircraft within the project area to Agency approved sites. Landings at other than pre-authorized sites shall be by specific Agency permission.
4. The Company shall undertake aerial revegetation over designated sensitive wildlife areas only with specific Agency approval and only at such times and in such manners that disturbance to wildlife is avoided (see "Terrestrial and Aquatic Mammals").



RECOMMENDATIONS: THE GOVERNMENT

5. For this project, the Agency should contain a "Flight Control Group" with responsibility for:
  - (a) preparing specific plans to meet the concerns presented in the sections on birds and mammals by controlling aircraft flight locations, times, heights corridors etc.
  - (b) Setting up and administering control procedures which include daily preview of flight plans of all project-related flights to ascertain whether a disturbance to known wildlife sensitivities would ensue or be likely. Based on information continually supplied by wildlife agencies, Company staff and Agency field staff, modifications of flight plans (routes, altitudes and frequency of flights over sensitive areas) could be designed.
6. The government should take the necessary measures to apply aircraft controls similar to those for the pipeline project to all aircraft in the region.
7. The government should establish a research program to evaluate the impact of air traffic disturbance on various wildlife species.

Comment: This research should include consideration of both short and long term impacts of aircraft disturbance on wildlife and should ascertain the effectiveness of flight restrictions on this problem. The degree of disturbance by different types and models of aircraft used in northern transportation should also be described and classified. In addition there should be an investigation into the frequency of aircraft flights over sensitive wildlife species which begin to show short and long term negative impacts (see also "Wildlife Management"). The cost of the program should be borne by the Company.



Wildlife Protection  
Aircraft Control

8. The government should vigorously enforce the regulations, forbidding harassment of wildlife, under the Territorial Game Ordinances and the Migratory Birds Convention Act.
9. To ensure least environmental disturbance to nationally important wildlife resources, the government should establish a series of aircraft flight corridors which follow road or pipeline rights-of-way where possible.
10. The government should adopt 2,500 feet AGL as a standard flight minimum for aircraft control to protect wildlife. Special provisions for higher levels may be required at certain times and locations (e.g. staging snow geese).

Comment: Air Navigation Orders are the suggested means for establishing minimum flight height over environmentally sensitive areas. Notice to Airmen (NOTAM's) do not achieve the degree of control necessary to safeguard sensitive resources.

SOURCES OF INFORMATION

1. Transcripts, Exhibits and Basic Documents

Exhibits 549: Heacock, H.A. April 1, 1976. A summary of Transport Canada's responsibilities and activities respecting aircraft operations in Northern Canada.

PAAG Report





## FISH PROTECTION

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### INTRODUCTION: FISH IN THE REGION

Fish are found in most flowing water systems and lakes along the proposed pipeline routes. The species present in the systems have specific northern characteristics and life histories which are sensitive to man-made disruptions to their aquatic habitat.

### Characteristics of Northern Fish

Arctic fish typically have slow growth rates, are large for their species, and are late to mature sexually. These factors lead to the situation where in most areas there is a large standing stock of the fish, but low rate of productivity to grow that stock. Northern fish can spend their lives entirely in freshwater, in salt-water, or move between the two media during various stages of their life cycles. Some species such as the arctic char have populations which spend their life cycles in freshwater, while others of the same species migrate to sea. Many populations of whitefish and lake trout use productive lakes as substitutes for the sea throughout much of the Arctic.

Arctic fish are usually opportunistic feeders because of the low productivity of northern waters. Terrestrial insects, bottom fauna, other fish and quite often almost any organic matter which an individual comes across, will be ingested. Certain species such as grayling specialize in terrestrial insects, while others such as longnose suckers feed mainly on bottom detritus when a choice is available. Most northern fish have specific migration routes, and limited spawning, overwintering, nursery and feeding areas.



## Fish Protection Introduction

The Mackenzie River, because it originates in warmer latitudes where the climate is less severe than the Arctic, is more productive and therefore has more fish species than either the Porcupine or North Slope drainages in the Yukon. Thirty-four species have been found in the Mackenzie, sixteen species in the Porcupine and seven in Yukon North Slope rivers. Significant runs of pacific salmon occur in the Porcupine-Yukon drainage, and arctic char are present in the North Slope and Mackenzie Delta rivers. Few salmon or arctic char are found in the Mackenzie River drainage south of the Delta.

Ground water springs provide important overwintering and spawning areas on North Slope rivers. The Porcupine, Arctic Red, Peel, Liard, Great Bear rivers and Mackenzie main stems, appear to provide spawning and overwintering capacities in the other two areas. As one would expect, species common to all three areas have similar life histories in each area, but migration patterns, overwintering, spawning, nursery and feeding areas are specific to each location.

Fish can be classified as either spring spawners or fall spawners. The significance in this division is that the eggs of fall spawners have to survive the rigors of the winter environment, and lie in the gravel from October until breakup the following May or June, when the fry hatch and move to their nursery areas. Spring spawners deposit their eggs at breakup and the young emerge within a few weeks. There is, therefore, a large difference between the two groups in the length of time that the eggs are vulnerable to environmental disruption.

### Mackenzie Valley Fish

In the Mackenzie River, the fall spawners constitute 62% of the species and spring spawners 35%. The burbot, or freshwater cod, is a winter spawner in the system. Major spring spawning species are arctic grayling, yellow walleye, northern pike, longnose sucker and flathead chub. The arctic grayling is distributed throughout the system and is probably the most important species of the spring spawners. Grayling undergo complex seasonal migrations. Spawning usually takes place over gravel in small relatively clear tributaries during spring breakup. The mature fish then appear to migrate to other feeding areas in the Mackenzie system, and overwinter in lakes or the main stem channels. Nursery areas for fry and immature fish are generally in the clear, swiftly flowing smaller tributaries.



## Fish Protection Introduction

Two other spring spawners, pike and walleye, are abundant in the southern Mackenzie. Walleye decline in numbers further north. These two species spawn in tributaries of the system, moving short distances to deep darker main stem rivers and lakes in summer, where presumably they overwinter. Pike are usually found in the shallow back eddies and weedy areas of the Mackenzie system. Both species feed mainly on smaller fish in the aquatic community.

Longnose sucker and chub are spring spawners adapted to turbid waters. Some chub migrations do take place in the system. These two species are mainly bottom feeders.

Fall spawners in the Mackenzie are dominated by the Coregonid (whitefish) class, the humpback, broad and round whitefish, arctic and least cisco, and the inconnu. With the exception of the larger lakes, these species have larger populations in the north end of the Mackenzie drainage.

Well-defined spawning migrations of the whitefish family take place in the Mackenzie Delta channels, Arctic Red, Peel, Great Bear and Mountain Rivers. Arctic and least cisco spend much of their life cycle in the sea. All these species extensively use the Delta channels and brackish Mackenzie estuary for feeding, nursery, and overwintering areas.

The Coregonid species begin migrating through the Delta in August and spawn in the upper Delta, Arctic Red, Peel and Mackenzie mainstem rivers in September and early October. Post spawning runs occur back down these rivers in late October and November. They appear to spawn under a variety of bottom substrate and water turbidity conditions. Fry are carried downstream to the Mackenzie Delta and estuary by the spring floods the next year. Arctic and least cisco, and inconnu stop feeding during their spawning migrations, living on stored body energy until returning downstream. Humpback and broad whitefish are generally bottom feeders with insect larvae and small shelled organisms making up the largest portion of their diet. Small fish form a large part of the inconnu diet. Cisco species are plankton feeders.

Lake trout occur in significant numbers in the deep lakes of the Mackenzie tributaries and the delta. They do not appear to be a major species in the flowing waters of the system.





## Fish Protection Introduction

Arctic char, another important fall spawner in the northern Mackenzie system, spawns and overwinters in the Peel and Big Fish Rivers.

Burbot are the only winter spawners in the system, with spawning taking place in February and March over sand or gravel. This species occurs throughout the Mackenzie drainage, mainly in the deeper lakes and river channels. It is a voracious eater of small fish and appears to follow species such as arctic grayling on its life cycle migrations in the system.

Other fish occurring in the Mackenzie system include smelt, goldeye and two species of dace, shiner, stickleback and sculpin.

### Porcupine Drainage Fish

New elements in the Porcupine drainage are the substantial runs of salmon and the absence of arctic char in the system.

As in the Mackenzie, the spring spawners are dominated by the arctic grayling, which are found throughout the system. Life histories are characteristic of the species with each population having its spawning cycle in specific small streams, moving to larger rivers and lakes for summer feeding, and perhaps moving again to a different location for overwintering. Northern pike and longnose suckers are found in the larger waterways of the system, but yellow walleye are not.

Three species of salmon dominate catches in the mainstem rivers in fall. These populations are heading for spawning grounds mainly centered on the springs area of the Fishing Branch River. They start their journey at the mouth of the Yukon River in Alaska, chinooks beginning their arrival at Old Crow in late July, chum in early August and coho in early November. The salmon run peaks in October. Chum salmon numbers are estimated between 115,000 and 250,000 depending on the year. Lesser numbers of chinook and coho salmon have been recorded. The salmon species have differing life cycles, the progeny of coho and chinook remaining to feed in freshwater for two to three years before migrating to the sea, and the young chum fry going directly to sea after hatching the following spring. All adult pacific salmon die immediately after spawning.

As in the Mackenzie, fall spawners of the Coregonid class include the inconnu, least cisco, and humpback, broad and round



## Fish Protection Introduction

whitefish. The missing species is the arctic cisco found in large numbers in the Mackenzie system. Little is known about the runs and spawning areas of these fish, as no readily identifiable migration patterns have been found in studies. It seems reasonable to assume that these species migrate upstream in late summer and early fall to mainstem spawning areas at the mouths of the larger tributaries of the system, and then return downstream to overwintering areas in the deeper lakes and channels in late September and October.

Burbot, the winter spawners, are found in a few of the mainstems of the Porcupine drainage. Trout-perch and chub found in the Porcupine drainage are important forage fish for the piscivorous (fish eating) species such as pike, inconnu and burbot.

### Yukon North Slope Drainages

Fish in these areas have a lower growth rate than the same species in the Porcupine and Mackenzie. They mature later, and the whole resource is less productive than that found in the other two systems. Arctic char are found in some North Slope rivers in large numbers.

Of the spring spawners, the arctic grayling is again a major species in almost all the systems. Their life cycle is centered around the springs and deep pools of the relatively small North Slope rivers. In winter, the shallow riffle areas of these streams freeze to the bottom, leaving no room for the fish to live. The springs and pools therefore become critical for spawning, overwintering, nursery and feeding activities of the grayling. Most of these areas are identified by having large expanses of aufeis in summer or open water in winter. Many have been mapped and described on the North Slope drainages. The only other spring spawner found in a few of the North Slope rivers is the northern pike.

The most important fall spawner in this area is the arctic char. As with the grayling, spring and deep pool areas in the North Slope system are critical to the survival of this species. Arctic char spawn in late summer and fall in the vicinity of the spring water sources, and fry emerge the following April and May to spend their first year feeding in streams. Then they return to the spring pool areas for overwintering. This process may go on for several more summers until the physiological change takes place in the young juveniles, which results in a spring



## Fish Protection Introduction

downstream migration to the Beaufort Sea as smolts. The char then spend the summer in the sea, but are thought to return to the North Slope drainages in late fall to overwinter. Presumably the cold marine waters would freeze their body fluid if they stayed at sea. The growing young char can make the freshwater-sea journey two or three times before they finally mature and spawn again in the spring areas. The char often go through the spawning cycle several times before dying. Young char feed on insect larvae, and freshwater shrimp. As they increase in size snails and other fish become increasingly important in their diet.

Several species of Coregonids are found in this area, including the humpback, broad and round whitefish and least cisco. The spring areas are very important to these populations. Sculpin and stickleback are also found in the North Slope systems.

### Coastal Areas

The Mackenzie Delta and coastal estuary and lagoon areas near the pipeline route are particularly important to fish. Nineteen freshwater and four marine species are known to use these areas extensively.

Coastal lagoons are important nursery areas for the juveniles of anadromous species which move downstream from spawning grounds in spring freshets. Lagoons and lakes with outlets to delta channels or the sea are also important feeding and over-wintering areas for marine, resident and migratory fish.

### Fish Utilization by Man

There are three kinds of fish resource utilization in the North: the domestic, commercial and sport fisheries. These three uses, overlap in some areas, as each fishery competes for the same species. This overlap will probably increase in future.

The domestic fishery has traditionally been very important throughout the area as a source of protein. RCMP stations, church missions, Hudson's Bay Company posts and the native inhabitants of northern settlements depend on fish for part of their diet and as food for their sled dogs. The domestic fishery has declined somewhat since the snowmobile has replaced dogs in many areas. However, the catch is still very important to northern people. At settlements and fishing camps fishing is usually done with





## Fish Protection Introduction

gillnets at breakup and freezeup, and under the ice in January and February. The catch is usually dried, smoked or frozen if it is to be used by people, or stored in permafrost pits for later use by dogs. Fish subsidize other wildlife sources of food in the North, particularly in settlements such as Old Crow and the delta communities.

Federal government policy for the future in the Arctic is to ensure that native people in the North have the option of retaining their traditional way of life. In line with this, harvesting of fish for domestic purposes takes precedence over commercial or sport fishery development.

Commercial fishing has continued in the Mackenzie drainage since its start in 1945 on Great Slave Lake. The whitefish family are the most important species harvested. The only other commercial operation outside the southern lakes of the system is a small experimental commercial fishery on the East Delta channel of the Mackenzie which in 1973 caught its quota of 3,000 pounds of inconnu and 50,000 pounds of broad whitefish.

Sport fishery represents the greatest potential for northern fish resource development. Arctic grayling stocks throughout the Mackenzie drainage and Northern Yukon have great potential for sport fishing, as do char and lake trout in the North Slope and Mackenzie Delta waterways.



FISH SENSITIVITY AND PRINCIPLES OF PROTECTION

GENERAL RECOMMENDATION

Fish protection should concentrate on preservation of significant fish populations by limiting or avoiding disturbance where and when fish are most sensitive and numerous. Thus, the pipeline project should avoid and make special allowances for fish spawning, rearing and overwintering areas and migration routes. Particular attention should be given to protection of species of value to man.

DISCUSSION

Spawning and rearing areas, overwintering sites, and migration routes, are probably the most critical habitats for fish in the North. Suitable water quality and food sources are also necessary. The importance of these habitat areas and parameters is particularly important in the Arctic because of the generally limited ability of fish populations to return to natural levels after a severe environmental disruption has reduced their numbers.

Spawning and Rearing Areas

Most northern fish species require spawning grounds which are free of silt, have the correct substrate (usually gravel or cobble) and suitable water temperatures. The gravel must be free of silt to allow water percolation around deposited fish eggs and thus permit gas exchange across the egg membranes with the surrounding water. Clean gravel also provides good substrate for juvenile fish food and suitable living space for them.

A pipeline project could disrupt spawning and rearing areas by:

- a) removing gravel used by fish for spawning and/or rearing;
- b) changing water temperature, dissolved oxygen or other water chemistry conditions so as to be harmful to fish;
- c) causing suspended sediment loads in streams to increase, which could result in silt settling out on spawning beds and smothering eggs; or



Fish Protection  
Fish Sensitivity

- d) sucking of juvenile fish into water intakes; and polluting streams with toxic fuels or chemicals from spills of these substances.

Overwintering Areas

Fish must survive severe ice conditions in the Arctic in pockets of spring water or in watercourses deep enough that they do not freeze to the bottom in winter. Flows of water which have tolerable chemistry, dissolved oxygen levels, silt loads and are free of toxicants must be maintained through these areas for fish survival. Eggs of fall spawning fish which are in stream gravel over the winter must also be in clean, well oxygenated water during their incubation time.

A pipeline project could disrupt overwintering areas by:

- a) cutting off intragravel flow feeding into an overwintering area by ditching or water removal upstream, causing fish to loose aquatic habitat or freeze;
- b) cutting off intragravel flow to a fall spawning bed, by ditching or water removal upstream, causing deposited egg dessication or freezing;
- c) reducing overwintering habitat by gravel removal, watercourse diversion or river structures;
- d) sucking of fish from overwintering sites into water intakes; and
- e) polluting streams with hazardous or contaminating substances.

Migration Routes

Spawning, feeding and overwintering migration routes and timing are very important for most northern fish species. Disturbance of river beds, which prevents fish from returning to normal life cycle areas, can affect survival. Some species do not feed en route to spawning areas; thus any significant delay in their migrating time could leave them with insufficient body energy to move to these areas. A pipeline project could disrupt migration routes by:





Fish Protection  
Fish Sensitivity

- a) creating barriers to migrations in rivers and streams by the installation of culverts, river diversion structures or ice bridges or lowering water level;
- b) causing toxic chemicals or silt to be discharged into a watercourse which could result in fish avoiding the impacted area; and
- c) sucking of migrating juvenile fish into water intakes.

Changes in Water Chemistry

Northern fish have limited tolerances for alterations in suspended solids, dissolved oxygen, temperature, and pH and salt content of their water environment. They also have specific tolerance limits to toxic substances such as methanol, fuels, pipe coating materials and the numerous other potentially hazardous chemicals used by the project.

A pipeline project could disrupt normal water chemistry by:

- a) causing very high levels of suspended solids which are abrasive to fish gill membranes, preventing efficient respiration, and, more likely, being toxic to invertebrates (fish food) and fish eggs;
- b) increasing water temperatures which could make important habitat areas unsuitable for fish adapted to very cold water, or in combination with excessive organic pollution from sewage could result in lethal oxygen levels;
- c) creating intolerable changes in pH, salt levels and other water chemistry parameters, which disrupt the normal habitats of fish; and
- d) adding noxious chemicals or fuels to waterbodies in amounts toxic to fish (see "Spill Prevention and Control").

For example, methanol has been found to be toxic to arctic char and grayling at concentrations of 2.5% but not at 1%. Eggs of these species are damaged at concentrations less than 1% (some effects are noted to 0.1%). Sublethal behavioural effects do not seem apparent in fish exposed to 1% methanol. Indirect effects on adult invertebrates which sometimes form



fish food indicate these are somewhat more tolerant of methanol than the fish themselves.

#### Contaminating or Tainting Substances

Some changes to aquatic environments do not affect the survival of fish themselves, but leave the fish either unpalatable or unsafe to eat by predators or man. A pipeline project could disrupt normal utilization of fish in the sport, commercial and domestic fisheries by:

- a) introducing persistent materials such as pesticides, PCB's, or heavy metals into water-courses where they could be picked up directly, or through a food supply, and accumulate in fish body tissue; levels of these substances in fish above public health standard would render the resource unusable for fisheries; and
- b) introducing materials such as phenols or fuel oils into watercourses which could taint fish and make them unpalatable to eat and therefore not usable for fisheries.

A disruption of the aquatic ecological balance in a particular system by reducing certain species, removing food sources by chemical contamination or siltation, or introducing a new species into a watershed where it is not native, can also upset the system. Northern populations are particularly susceptible to this sort of disruption because of the relatively few species present and, therefore, short food chains and simple inter-species relationships.

As one would expect, fish resilience varies from species to species. Direct tests on the effects of life history disruption or the ability of fish populations to recover from it, have hardly been studied at all in the North.

The spring spawner arctic grayling, and fall spawners, arctic char, pacific salmon, lake trout, inconnu, humpback and broad whitefish, and arctic and least cisco, appear to be the least resilient northern fish because of their relatively low tolerance to siltation, particularly during spawning. Slow growth and narrow age classes are also a problem in recovery. These species are the most economically valuable in the domestic, commercial and sport fisheries.



## Fish Protection Fish Sensitivity

Northern pike, walleyes, longnose and white suckers, flathead chub and burbot probably have relatively high resilience because of broad habitat tolerance and wide distribution.

The piscivorous or fish-eating species, such as pike, char, inconnu and burbot, would be most susceptible to chemical contamination because many biological contaminants pass up the food chain and concentrate at higher levels in predators.

### RECOMMENDATIONS

The following principles and recommendations for protection of fish are intended for the guidance of the Company and the Agency in preparing and reviewing designs, procedures, schedules and mitigative measures. More specific recommendations regarding fish are presented in several sections of the report immediately following this one and also under such headings as "Water Supply and Intakes", "Spill Prevention and Control", "Borrow Operations" and "Water Quality".

1. Fish protection measures should be aimed at important fish populations rather than scattered individuals.
2. Fish protection should be designed to minimize disturbance where and when fish are most sensitive and most numerous, and principally in spawning grounds, overwintering areas, and migration routes.
3. Protection measures should be applied principally to those aspects of the project that are most damaging to fish in these sensitive stages of their life cycle.
4. Fish species utilized in domestic, commercial, and sport fisheries shall be afforded greatest protection.
5. Domestic and commercial fishing activities shall be given precedence in locating and scheduling pipeline activities.
6. In general it should be possible to limit adverse effects on fish by adjusting locations, schedules, designs or construction procedures. Nonetheless, the Company should be prepared to apply mitigative or control measures where adjustments to the project have not achieved the required protection.





Fish Protection  
Fish Sensitivity

7. The numerical fish-protection standards that are recommended in this report are intended for general control of project design, construction and operation. However, it is intended that the Agency should allow the Company to seek relief from any such standard at a location where the Company can demonstrate that an exception is warranted.
8. Pipeline construction and other activities should be kept away from spawning and rearing areas at sensitive times. In particular, such areas should be protected from siltation gravel removal, fuel spills and changes in water temperature, dissolved oxygen and water chemistry.
9. Pipeline construction and pipeline related activities in winter should be kept a safe distance from overwintering areas (fish or eggs) and particularly where water flow is limited. Such areas should be protected from decrease in water level and flow caused by construction or water intake, siltation, chemical pollution of water, changes in water temperature and decrease in dissolved oxygen content.
10. Pipeline activities should not interfere with fish migrations. In particular, migration routes and times should be protected against diversion or blockage of flow, lowering of water level, major increases in suspended sediment, or spills of fuel or toxic chemicals.



SUSPENDED SEDIMENT STANDARDS

GENERAL RECOMMENDATION

The practices of pipeline construction shall be those which will minimize the release of silt into waterbodies frequented by fish. Specific standards shall be used to measure the silt load in watercourses. If silt loads exceed the standards, additional erosion control and silt control measures shall be instituted to ensure that the living aquatic resources are adequately protected.

DISCUSSION

The pipeline construction will result in the removal of vegetation, road construction, grading and filling, laying of gravel, ditching, stream crossings, modification of river banks and revegetation of denuded areas. All these activities shall be carried out in such a manner that disturbances of the environment, which may lead to increased siltation of waterbodies by direct disruption or by increased runoff from land areas, will be minimized. If revegetation is slow or only partially successful, silt could continue running into waterbodies over several seasons.

To cause direct short term damage to fish, such as acute lethality, it would require extremely high concentrations of suspended solids. However, finely divided suspended solids may damage aquatic ecosystems by settling to the bottom and 'blanketing' out normal fish food organisms. Or they may spoil spawning beds by decreasing the percolation of water through the substrate. If siltation damage to spawning beds or fish food occurs in only one year, recovery of the stream bed can be expected in successive seasons. In such a case, overall damage to fish populations would probably not be great. The standards proposed in the following are designed with this in mind. Two standards are proposed for estimating the increase in finely-divided solids in waterbodies and for assessing the effects of any increase on bottom macroinvertebrates in a stream. The standards are intended (a) to provide a practical means of measuring the silt load resulting from the pipeline project and its effect on aquatic organisms, and (b) to provide criteria for adequately protecting the living aquatic environment. The standards and measurement methods have not been tested in the North. Such testing should be done, together with work designed to improve their formulation and application.



Fish Protection  
Suspended Sediment Standards

The purpose of this standard is to set limits of change in suspended sediment which may be checked and not exceeded, in order to prevent wide scale or continued damage to aquatic life.

There are several different ways of measuring finely divided solids in water. The best-documented one with respect to fish, is the weight of suspended solids (SS), more properly called "Non-filtrable Residue" in modern terminology. However, this is not a very suitable method for field monitoring in northern areas. It requires power, a filter, drying oven, sensitive balance, and considerable care. Results are not immediately available for feed-back on operational activities. Turbidity is accordingly recommended because it can be determined fairly easily in the field, and the results are immediately known. Since the most widely accepted recent criteria for aquatic life are based on AA (EIFAC, 1965; NAS/NAE, 1974), turbidity criteria have been derived for the present purpose by correlating turbidity with SS for all available samples in the Mackenzie drainage basin for the past 11 years, stored in the NAQUADAT system (Environment Canada, 1976).

Standards were derived from the recently recommended SS criteria in the U.S.A. (NAS/NAE, 1974). They give four maximum levels for SS, depending on the level of protection desired for aquatic life. For each of these maxima, the corresponding value of turbidity in the Mackenzie drainage was taken as summarized in the table below.

<u>Level of Protection</u>	<u>U.S. Criteria Maximum SS, mg/l</u>	<u>Corresponding Mackenzie Maximum Turbidity, NTU</u>
High	25	18
Moderate	80	45
Low	400	157
Very Low	Over 400	Over 157

For turbidity, the moderate criterion is 2.5 times the high criterion, and the low criterion is 3.5 times the moderate one. For practical purposes, we may average these and say that an increase of about 3 times in turbidity will lower the level of protection by one category. Arbitrary objectives have been adopted, that an increase in turbidity should not cause a degradation of more than one category for a period of a month, not more than two categories for a period of 4 days, nor more





Fish Protection  
Suspended Sediment Standards

than three categories for more than 8 hours. These objectives would be satisfied in most cases, if natural turbidity were not increased more than the limits stated in the standards, 3 times, 9 times and 27 times.

The following problems may have to be overcome in implementing the standard.

- a) Results may vary across the width of a stream river, or day-to-day with wind in lakes. The standards are intended to apply at any point which is at the recommended distance from operations.
- b) Collecting of samples will be difficult in winter. Well-designed equipment will be required for penetrating ice and retrieving samples.
- c) If turbidity exceeds the standards, it will mean that construction practice is not satisfactory. This will be difficult to correct quickly, e.g. grading of stream banks, once done unsatisfactorily, will continue to silt in excess of the standards.

Macroinvertebrate Standards

This standard is intended to provide an assessment of the biological effects of an increase in sediment. The status of the resident community reflects conditions over previous weeks or months, and therefore serves as a continuing, cumulative monitor. To a large extent it will reflect any problems which are not detected by the turbidity measurements because of their infrequency.

The biological evaluation could well be used by the Company but this is not required. Rather, it is intended as an overall check for use by the Agency. In questionable cases, findings of the biological survey should take precedence over predicted effects from physical and chemical sampling.

The diversity of the aquatic community also monitors other kinds of environmental damage, in addition to siltation.

Biological survey to assess water pollution needs no justification in view of its long history and frequent



## Fish Protection Suspended Sediment Standards

utilization. Use of only the Shannon Diversity Index is recommended even though the proposal could be critical because there are many other ways of interpreting ecological data (ACMMR/IABO, 1971). Some are complementary, but many have a less favourable theoretical basis, are subjective, or yield no clear single number as is desirable for a standard. The Shannon index has been used for many years. It has proven reasonably sensitive, reliable and robust in the hands of professionals and beginners alike.

The value of 25% change is an arbitrary one based on experience. It seems reasonable considering results usually obtained (Whilm, 1970). For example, a decrease in the Shannon index from a "natural" value of 3.0 to 2.25 would almost certainly be the result of environmental change. Such a difference would usually be statistically significant, given a series of replicate samples. Moderate or severe damage would push the index lower than the 25% change given in the standard. An upward change in the index would also be considered a deleterious effect. Although it is conceivable that this could happen in some habitats as the result of added sediment, it is unlikely.

The following problems may be encountered in implementing this standard:

- a) Sampling of benthic invertebrates will be difficult during periods of high discharge in rivers. However, it is probably satisfactory for assessing continuing or long term effects, for which the standard is intended.
- b) Separation of benthic invertebrates into individual species is often a problem. This is minimized when the natural and affected samples are treated by the same person or persons. There should be no difficulty in recruiting biologists to carry out this work.

### RECOMMENDATIONS

1. Allowable levels of finely-divided solids in water shall be judged by the following standard:



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Suspended Sediment Standards

- a) at the specified distance (see Recommendation 5) from operations, turbidity of the water shall not average more than 27 times the natural level during any 8 hour period, nor more than 9 times the natural level during any 96 hour period, nor more than 3 times the natural level during any 30 day period.
2. The following standard may be used by the Agency as an overriding definitive criterion for judging ecological damage:
  - a) at the specified distance (see Recommendation 5) from operations, the Shannon Diversity Index for bottom-living aquatic macroinvertebrates shall not be changed more than 25% from the natural value as a result of the addition of finely-divided solids.
3. These standards shall apply during construction activities, and afterwards for two years as a result of them.
4. In the year starting 12 months after completion of an operation, turbidity shall not exceed one-half of the levels of change stated in Recommendation 1, and diversity should not be changed more than that stated in Recommendation 2.
5. Sampling location:
  - a) In rivers and streams, samples shall be taken downstream from the source of sediment at the approximate distances indicated in the following table, and a control or "natural" sample shall be taken upstream.

Width of River or Stream	Sampling Point Downstream
Less than 10 feet	100 yards
10 - 100 feet	0.25 miles
100 feet - 0.25 miles	1 mile
More than 0.25 miles	2 miles

In lakes or ponds, samples shall be taken at the approximate distances from the source of sediment given in the following table. The direction of the sampling site from the construction shall be that of maximum effect, depending upon currents and wind. A control or "natural" sample shall be taken in a very similar nearby





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waterbody, or in an unaffected part of the same one, if that is possible.

<u>Greatest Dimension of Lake or Pond</u>	<u>Distance of Sampling Point</u>
Less than 400 yards	One half of the longest dimension
400 yards - 1 mile	200 yards
1 mile - 10 miles	300 yards
More than 100 miles	350 yards - 0.2 miles

6. Measurement of turbidity:

Turbidity shall be measured in nephelometric turbidity units (NTU) using any reliable commercially available meter. Battery operation would probably be most convenient. Procedure for measurement shall follow part 214A of "Standard Methods" (APHA et al., 1976).

7. Macroinvertebrate sampling:

Benthic macroinvertebrates may be taken with any quantitative device proven to be reliable, such as a Surber sampler, in stream riffles. The device should sample at least 0.1 sq. m. or 1 sq. ft. The same apparatus shall be used to sample "natural" and "affected" areas. Sampling shall be carried out at the same time in both places, since communities may vary seasonally.

It is of utmost importance that the two biological sampling places have nearly identical habitat, particularly type of bottom and velocity of water. In streams, most consistent results are obtained in riffle areas, i.e. places where the water is shallow and turbulence is evident at the surface. For this reason, it is permissible to adjust the "affected" sampling location to get a section of habitat that is both suitably similar to the "natural" section and close to the stipulated point.

One good sample is generally sufficient for routine purposes. In cases of irregularities or suspected damage, 2 or 3 samples are usually adequate to establish variability at a given location.



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The Shannon Diversity Index shall be determined according to the formula,

$$\bar{d} = -\sum \left( \frac{n_i}{n} \right) \log_2 \left( \frac{n_i}{n} \right)$$

where  $n_i$  is the number of individuals in the 1st, 2nd ... ith species,  
and  $n$  is the total number of individuals in the sample.

The index may be calculated with the aid of a computer program, or in the field the contribution ~~to~~ may be taken from a table.

8. Sampling Frequency:

This shall be done frequently enough to adequately assess the amounts of finely-divided solids generated through construction and immediately afterwards. In particular, turbidity must be measured at time of peak activity and during changing discharge. These records shall be available to inspection personnel (see "Monitoring of Aquatic Environment").

9. Adequate notice of construction activity shall be given to the Agency, so that it may plan suitable checking of operations and standards.

10. The standards should be tested in the pipeline area under field conditions by the Company and the Agency and referred, as appropriate, in order to develop acceptable and workable suspended sediment criteria for monitoring the pipeline project. If alternative standards were to be considered they should have the following characteristics:

- a) they must be quantitative and objective in nature;
- b) they must be of high enough rigorousness, repeat ability and resolution to adequately protect the living aquatic environment along the line;
- c) they must be practical to test and enforce in conditions which will be encountered for a large construction project in northern cold, dark environments;



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- d) they must have quick on-site feedback to the Company and enforcement agency charged with making on-site erosion control and construction methods decisions;
- e) they must be routinely workable by a small staff, relatively unskilled in sediment load assessment practices (the interpretation of results over the set standard may require professional assessment; and
- f) they must measure both short term and long term increases in sediment load.

SOURCES OF INFORMATION

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- 1976 Indices for measuring responses of aquatic ecological systems to various human influences; Working party on Ecological Indices of Marine Pollution; F.A.O., Fisheries Tech. Paper No. 151.

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- 1976 Standard methods for the examination of water and wastewater; APHA, Washington, 14th ed.

Canada DOE. Water Quality Branch

- 1976 Water quality data report (Computer print out of data stored in NAQUADAT system, for chemical and physical analysis of water of rivers in Mackenzie Valley drainage basin, 1965 to 1976).

European Inland Fisheries Advisory Commission.

- 1965 Report on finely divided solids and inland fisheries; International Journal of Air and Water Pollution, 9:151-168.

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U.S. National Technical Advisory Committee





Fish Protection  
Suspended Sediment Standards

1968      Report of the U.S. National Technical Advisory  
Committee on water quality criteria to the  
Secretary of the Interior; U.S. Federal Water  
Pollution Control Administration.

Wilhm, J.

1970      Range of diversity index in benthic  
macroinvertebrate populations; Journal of Water  
Pollution Control, 42:R221-R224.



BARRIERS TO FISH

GENERAL RECOMMENDATION

Permanent or temporary barriers in waters inhabited by fish shall not adversely affect the life cycles of the fish.

DISCUSSION

During the construction and operation of the pipeline, the following types of structures will be built in watercourses: culverts beneath temporary and permanent roads; temporary and permanent berms to protect river bank structures; dykes to divert river flow; temporary coffer dams; and ice bridges. Such structures could prevent or delay fish migrations by causing increased water velocity, abrupt drops or breaks in water level, or by blocking the vegetation route.

RECOMMENDATIONS

Primary measures

1. The placement of temporary structures in a watercourse shall be scheduled as much as possible when fish are not migrating in the vicinity.
2. Structures in watercourses shall avoid fish sensitive areas.

Measures for watercourses containing fish migrations

3. The lower ends of culverts in stream beds shall be placed so as to eliminate any drop.
4. Bridges shall be used wherever practicable in place of culverts on fish migration routes.
5. Culverts in watercourses containing fish shall be such a size and gradient that the peak water velocity and minimum water depth do not inhibit passage of migrating fish. The applicable standards are as outlined in Dryden and Stein, 1975.
6. Stream bed material shall be placed inside culverts wherever possible to create velocity pockets.
7. In suitable locations designed fords may be used for temporary stream crossings in place of culverts.



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Barriers to Fish

8. Winter road ice bridges shall be removed from small watercourses before breakup.
9. Construction and use of temporary coffer dams, berms and diversion dykes in any watercourse frequented by fish shall be done in stages or time-staggered to ensure that water velocity remains below that suitable for fish passage.

Implementation

Before construction, the Company shall submit to the Agency for design review complete plans for dredging, trenching, diversion structures, or road crossings in waterbodies. Such plans shall include:

- a) schedules for the activities;
- b) amounts of spoil material to be removed or placed;
- c) designs for the work;
- d) methods of construction;
- d) data on present flow regime or bathymetry of the waterbody in which work will be done;
- f) data on fish resources present in the waterbody at all times of the year;
- g) information on how flow regimes or bathymetry of the waterbody will be altered by construction; and
- h) an assessment of how fish species present in the system will be affected.

SOURCES OF INFORMATION

Dryden, R.L. and J.N. Stein  
1975 Guidelines for the protection of the fish resources of the Northwest Territories during highway construction and operation. Res. Impact Div. Fish and Marine Serv. DOE, Tech. Rep. Ser. No. CEN/7-75-1.





UNDERWATER BLASTING

GENERAL RECOMMENDATION

Blasting in waterbodies, although an essential component of pipeline construction, should be avoided in the vicinity of fish sensitive areas. Where blasting must be carried out, every effort should be made to schedule the activity so that fish concentrations are avoided, especially at sensitive periods of their life cycle.

DISCUSSION

Explosives will be used for pipeline ditching and gravel removal operations where the presence of rock or rough frozen terrain makes mechanized excavation impossible. Some blasting in watercourses will be necessary. There has been frequent comment throughout the hearings, particularly at the communities, on the detrimental impact of underwater blasting on fish, muskrat and beaver. This section is concerned only with fish.

In the Yukon Territory, Fishery Regulations made under the Fisheries Act include, in Section 9, the directive that no person shall use any explosive for any purpose in water frequented by fish without approval of the Fisheries Service of Environment Canada. In the Northwest Territories the use of explosives may be permitted under a licence issued by the Minister pursuant to the Northwest Territories Fisheries Regulations (Millen, CARC, 103:15795).

The effects of blasting on fish include direct consequences from the blast, and siltation from the blasted material. It has been speculated that chemicals present in the water immediately after the explosion may be detrimental to fish, and could disrupt fish migrations.

Blasting affects the swimbladder, an organ present in most freshwater fish to aid in swimming: the shock waves rupture the bladder, often damaging tissue organs near it and bursting blood vessels.

Factors which determine the extent of damage to fish include water depth, distance from the blast, strength of charge and position and type of bottom in relation to the charge. The most serious impacts on fish take place close to a blast in gravel- or rock-bottom streams. Silty or muddy stream beds absorb some of



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the shock waves whereas hard stream beds reflect the shock. Detonations under ice are more detrimental to fish than those in open water since the ice tends to contain the shock waves. The lethal effects on fish from blasting under ice have been recorded as much as 550 feet from the blast site.

Blasting could significantly reduce fish populations if it took place in reproduction or overwintering areas, when fish were concentrated there. Simultaneous activities in a watercourse could result in a more serious impact on fish populations as the fish would have fewer areas to move to during a blasting operation.

#### RECOMMENDATIONS

1. Blasting shall not be permitted in waterbodies when and where:

- (a) fish eggs are present in the bed;
- (b) fish are spawning in restricted areas;
- (c) fish are overwintering in restricted areas; and
- (d) fish are migrating in concentrated schools.

This exclusion shall apply to blasting within 1,000 feet of any of the above.

2. Blasting shall only be permitted in water frequented by fish if effective measures are taken to protect the fish. Such measures could include:
  - (a) adjusting time of blasting;
  - (b) moving fish and keeping them out of blast area by nets;
  - (c) use of blast deflectors (sand bags) or absorbers (air curtains);
  - (d) use of charges of minimum size; and
  - (e) detonation of charges in sequence (with sufficient delay between firings to allow dissipation of the shock wave).



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This requirement shall apply where significant numbers of fish occur within 1,000 feet of the blasting site.

3. If fish are killed by a blasting operation, the blasting shall cease until effective measures are taken to protect the remaining fish (for instance, waiting for the fish to leave, removing the fish by netting or protecting them with blast deflectors).
4. Blasting shall meet the same siltation standards as other in-water pipeline activities (see "Suspended Sediment Standards").
5. Blasting on river banks shall be controlled so that debris does not enter the waterbody.
6. Blasting activities in and adjacent to waterbodies shall conform to the terrain clean-up and rehabilitation standards applicable to other pipeline activities (see "Blasting").
7. Underwater blasting shall not be permitted within one mile of sites when fishing is activity in progress. This will require consultation with local people and local fishermen must be given advance information on the times of blasting (see "Blasting").
8. Where a requirement for blasting in a waterbody is identified during design and planning, the Company shall submit to the Agency an application for permission to blast, together with the information needed to assess the potential impact of blasting on fish and a statement of plans to protect the fish during blasting.
9. Where a need for blasting in a waterbody is identified during construction activities, the Company shall arrange for and allow time for review and approval by the Agency of the blasting proposal, its potential impact, and fish-protection plans.





Fish Protection  
Underwater Blasting

SOURCES OF INFORMATION

1. Transcripts, exhibits, basic documents

CAGPL        McCart, P.J. (92:14045-47; 93:14076-78; 96:14616-18; 155:20461-62); Williams, G.L. (38:4900-02; 39:5079-81)

CARC        Millen, J.M. (103:15795)

COPE        Trudeau, H.R. (128:19505-12)

EPB        Wilimovsky (48:6395-96; 6413-16; 108:16463-66)

Community hearing examples:

Charlie, Chief J. (C-13:1258); Abel, C.  
(C-16:1553)

2. Reports

Aquatic Environments Ltd.

1976        Compilation of recommendations to Northern  
Engineering Services and CAGSL.



MONITORING OF AQUATIC ENVIRONMENT

GENERAL RECOMMENDATION

To protect the living aquatic environment during construction and operation of a gas pipeline in the western Arctic adequate monitoring is necessary. Programs shall be carried out before, during and after construction.

DISCUSSION

This section does not go into detail on how specific tests shall be carried out, or what administrative body shall do them. It is a summary of the type of aquatic monitoring that is necessary, the times and frequency of such assessment. The objectives of monitoring the parameters are outlined below.

1. Turbidity: to be used as a measure of suspended sediment to compare levels during the post construction with pre-construction levels. During construction, turbidity levels downstream from construction will be compared with turbidity levels upstream.
2. Dissolved Oxygen Levels: to be monitored to ensure adequate oxygen levels in water where fish resources are present. These levels would be measured in waters which may be disturbed by construction or operation of the project, and would be most critical in winter.
3. Water Levels and Flows: to be monitored in areas where and when water quantities are limited to ensure adequate quantities for fish are maintained.
4. Nutrient Levels: to be monitored in waste disposal areas to ensure over enrichment of fish habitat or high biological oxygen demand does not occur.
5. Fish and Bottom Sediment Contaminant Levels: to be monitored as a baseline measure to warn of any fishery resource contamination.
6. Water Temperature: to be monitored to ensure that tolerable limits for aquatic resources are maintained and that water temperature is low enough to maintain adequate oxygen levels.



Fish Protection  
Monitoring

7. Gravel Removal Sites: to be inspected before, during and after construction to assess site suitability for removal, conformity with extraction plans, adequacy of restoration of site, and return of site to stable state.
8. Chemical Water Quality Monitoring: certain parameters to be monitored in specific locations where pipeline-related activity could create chemical change in water quality which could have an adverse effect on fish.
9. Resource Use: some measure of the fish catch along the route is necessary to ensure stocks are not being depleted by overfishing. This is probably a responsibility of government with co-operation of the Company.
10. Water Velocities Through Culverts and Some Diversion Structures: to be monitored to ensure velocities were within limits of fish swimming speeds for upstream migrations.
11. Explosives Use in Water: visual checks to ensure local fish populations were not being physically affected by blast shock waves.
12. Pipeline Crossing Site Inspections: visual checks to ensure erosion control devices are working and disturbed areas are returning to stable state.

In addition to general monitoring, a few comprehensive studies may be necessary in certain living aquatic environments that are sensitive to environmental disruption or extensive resource use by man. Parameters such as benthos productivity and diversity, domestic fishery resource population dynamics, or monitoring of a rare species abundance, may be necessary.

Analysis of site-specific field data and the drawing up of more detailed engineering plans will be necessary before the studies required in this area can be determined.

#### RECOMMENDATIONS

The recommendations take the form of a table. The table is broken into three parts: Before Construction, During Construction and After Construction. Sampling points for the various measurements should be located as outlined in "Suspended Sediment





Fish Protection  
Monitoring

Standards". In the column headed "Season", S stands for Spring, Su for Summer, F for Fall, and W for Winter.



# BEFORE CONSTRUCTION

NO.	SUBJECT	SEASON	METHOD	FREQUENCY	LOCATIONS
1	Natural turbidity	S, Su, F, W	NTU meter readings of grab samples	Seasonally	<ul style="list-style-type: none"> <li>- crossing sites</li> <li>- gravel removal sites</li> </ul>
2	Bottom invertebrates	S, Su, F, W	Shannon Diversity Index	Seasonally	<ul style="list-style-type: none"> <li>- at sites particularly sensitive to siltation</li> </ul>
3	Oxygen levels	W	Oxygen meter readings of grab samples in field	Twice/season	<ul style="list-style-type: none"> <li>- winter crossing sites</li> <li>- winter gravel removal sites</li> <li>- treated sewage release sites</li> <li>- treated chemical release sites</li> </ul>
4	Water levels and flows	S, Su, F, W	Hydrometric and lake sounding instrumentation	Seasonally	<ul style="list-style-type: none"> <li>- watercourses crossed by the line</li> <li>- to be used as water sources</li> <li>- to be used to dispose of treated chemicals</li> </ul>
5	Nutrient levels	S, Su, F, W	Quick field method such as specific conductance	Seasonally	<ul style="list-style-type: none"> <li>- treated sewage disposal sites</li> <li>- treated chemical disposal sites</li> </ul>



NO. SUBJECT	SEASON	METHOD	FREQUENCY	LOCATIONS
6 Fish tissue contaminant levels	Any one sample period	Lab tests by absorption techniques; heavy metals PCB's and pesticide detection tests	Once before construction	Composite samples of fish tissue, kidney and/or liver from each construction site where use of the fish resource is taking place.
7 Water temperature	S, Su, F, W	Celcius thermometer	Seasonally	<ul style="list-style-type: none"> <li>- crossing sites</li> <li>- treated sewage disposal sites</li> <li>- treated chemical disposal sites</li> </ul>
8 Inspections of potential gravel removal sites	Su	Visual	Once before construction	Field review of all potential gravel removal sites from watercourses.
9 Bottom sediment contaminant level monitoring	Su	Lab tests by absorption techniques; analysis for heavy metals, PCB's, pesticides.	Once before construction	From bottom sediment 100 m downstream of: <ul style="list-style-type: none"> <li>- crossing sites</li> <li>- treated sewage and</li> <li>- chemical disposal sites.</li> </ul>

DURING CONSTRUCTION

NO. SUBJECT	SEASON	METHOD	FREQUENCY	LOCATIONS
10 Turbidity	S, Su, F, W	NTU meter readings of grab samples taken from field	Daily at site during hours of construction activity	<ul style="list-style-type: none"> <li>- crossing sites</li> <li>- gravel removal sites</li> </ul>





NO. SUBJECT	SEASON	METHOD	FREQUENCY	LOCATIONS
11 Bottom Invertebrates	S,Su,F,W	Shannon Diversity Index	Once/season	- at sites particularly sensitive to siltation
12 Oxygen	W	Oxygen meter readings of grab samples taken in field	Once/winter at crossing sites and gravel removal areas. Monthly throughout winter at disposal and water removal sites.	- winter crossing sites - winter gravel removal sites - water removal sites - treated sewage release sites - treated chemical release sites.
13 Water levels and flows	During Removal	Hydrometric and lake sounding instrumentation	Weekly	Monitoring of streams and lakes: - to be used as water sources - to be used to dispose of treated sewage or chemicals.
14 Nutrients	During construction period	Quick field method such as specific conductance. If problem develops, phosphorous, ammonia and nitrate analysis in the laboratory of grab samples.	Monthly weekly	- treated sewage disposal sites - treated chemical disposal sites
15 Resource Use	S,Su,F	Creel census	Monthly	All sport fishing sites near pipeline route.



NO.	SUBJECT	SEASON	METHOD	FREQUENCY	LOCATIONS
16	Water velocities through culverts and diversion structures	S, Su, F	Water flow meter	Weekly in spring. Monthly Su and F	Outflows of all culverts and diversion structures (water drops should also be checked).
17	Water temperatures	S, Su, F, W	Celsius Thermometer	Monthly or if intermittent daily when water outfall is in operation. - if problem develops daily	<ul style="list-style-type: none"> <li>- treated sewage and chemical disposal sites,</li> <li>- coding water outfall sites</li> <li>- warm water effluent outfall sites.</li> </ul>
18	Explosives use in water	During construction	Visual	During each detonation	At all sites where blasting in water will be used.
19	Inspections of gravel removal sites	During removal operations	Visual	Daily during removal	All gravel removal sites from watercourses.
20	Toxic chemical monitoring	S, Su, F, W	Laboratory analysis of grab samples for specific toxic chemicals which could be expected (eg. oil & grease, phenolics, salts, heavy metals, PCB's etc.)	Monthly	<ul style="list-style-type: none"> <li>- treated sewage, stockpile and chemical disposal sites.</li> </ul>



NO. SUBJECT	SEASON	METHOD	FREQUENCY	LOCATIONS
		<u>AFTER CONSTRUCTION</u>		
NO. SUBJECT	SEASON	METHOD	FREQUENCY	LOCATIONS
21 Turbidity	S, Su, F, W	NTU meter readings of grab samples taken in field	Seasonally for two years after construction.	- crossing sites - gravel removal sites
22 Bottom Invertebrates	S, Su, F, W	Shannon Diversity Index	Seasonally for two years after construction	
23 Oxygen levels	W	Oxygen meter readings of grab samples in field	Once during winter following construction	- crossing sites - gravel removal sites - water removal sites - treated sewage and chemical release sites.
24 Nutrients	Su, W	Quick field methods such as specific conductance	Once/season for one year after construction	- treated sewage disposal sites - treated chemical disposal sites
25 Fish tissue contamination	Any one sample period after construction	Lab tests by absorption techniques. Heavy metals, PCB's and pesticide detection tests.	Once - one year after construction	Composite samples of fish tissue, kidney and/or liver from resource use site.





NO.	SUBJECT	SEASON	METHOD	FREQUENCY	LOCATIONS
26	Inspections of gravel removal sites	Su	Visual	Once/summer for two years after construction	Field review of all potential gravel removal sites from watercourses,
27	Bottom sediment contaminant monitoring	Su	Lab tests by techniques Analysis for heavy metals, PCB's pesticides	Once - one year after construction	- crossing sites - treated sewage and chemical disposal sites.
28	Crossing site inspections	S, Su, F, W	Visual	Monthly - weekly in spring for two years after construction	All pipeline and access road crossing of watercourses
29	Water velocities through culvert and diversion structures	S	Water flow meter	Monthly in S for two years after construction.	Outflows of all culverts and diversion structures (water drops should also be checked).



FISHERIES AND FISHING

GENERAL RECOMMENDATION

Construction and operation of the pipeline and associated activities shall not interfere with domestic, sport, or commercial fishing activities; shall not cause physical disturbance to fishing areas or sites; and shall not bring about changes to water that cause fish to avoid fishing areas. Moreover, protection shall be afforded to the fish resources upon which the fisheries depend.

DISCUSSION

Pipeline construction will provide access to many sport, domestic and commercial fishing locations previously isolated or available only by air. The access will be developed through road construction, location of construction and operating personnel in wilderness areas, and an increase in air and water traffic along the route. Increased sport and commercial fishing activity will probably result.

Fish populations have a limited capacity to replace individuals lost to them by natural mortality or fishing. If this limit is surpassed by high fishing pressures, the population in an area will decline. Disruptions of critical aquatic habitat remote from fish-resource exploitation could also affect fishery success.

Increased access to fishing areas could have both negative and positive effects. It could make fly-in wilderness fishing areas less attractive to sport fishermen who enjoy the remoteness of the leisure activity. It could also open to road transport new areas for sport and commercial fishing. Access to these fisheries at a more economical cost than at present would be possible.

Temporary access, opened up by the project could cause short-term reductions in fish populations along the route through overfishing, if fishing by pipeline personnel were unregulated. Longer term reductions could result from permanent access if fishing were not adequately controlled.

Domestic fishing or fishing areas important to the subsistence of local people could be disturbed. Opportunities for potential



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sources of income for local people through commercial fishing and through 'guiding' could be created.

When commercial fishing quotas and sport fishing creel limits are established, it may be necessary to consider environmental impacts of the pipeline, and of other developments in the area, in order to arrive at realistic figures for the allowable catch designed to pressure the fish resource.

## RECOMMENDATIONS

### Requirements Prior to Construction

1. In order to plan for protection of fisheries, the Company shall compile a catalogue of fishing areas and fishing activities along the route. This catalogue will contain information on the following matters.
  - a) A complete listing of fish species caught in the domestic, commercial and sport fisheries.
  - b) The approximate sizes and weights of the fish caught in the above fisheries.
  - c) The numbers of the fish caught in the domestic, commercial and sport fisheries.
  - d) The time of year at which the fish are caught.
  - e) The exact location where the fish are caught (i.e. net sites).
  - f) The location of past, present and future potential fishing camps.
  - g) The methods by which the fish are caught, including the mesh sizes of nets, the length and depth of nets, or of angling methods.
  - h) An approximate estimate of catch per fishing effort.
  - i) The stage in the life cycle at which the fish are caught (spawning run, overwintering, migration, etc.)





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- j) The way fish are used after being caught.
  - k) The methods by which the fish are preserved (smoking, drying, freezing, etc.)
  - l) The methods by which the fish are transported from the fishing site to location of usage and/or of processing.
  - m) The money spent in catching the fish at each fishery, particularly in commercial and sport fisheries.
  - n) The numbers of people involved in each fishery.
2. Before pipeline activity begins, government should set quotas for fishing areas along the pipeline route. The quotas shall be used as a basis for controlling the level of fishing activity by company personnel and any other changes in fishing activity in each area that results directly or indirectly from the pipeline project.

Comment: The quotas should be set at conservative levels bearing in mind the limited information available on fish population and the potential impacts of pipeline construction on fish. Ideally, quotas reflect the number of fish that can be removed from a population, on an ongoing basis, without causing a decline in numbers or quality: extensive biological research would be required to make accurate predictions.

Location and Scheduling of Activities:

- 3. Pipeline-related facilities and activities shall be located at least 1000 yards from any existing well-defined domestic, sport or commercial fishery area.
- 4. All waterborne traffic shall avoid fish netting areas and the Company shall mark such locations with appropriate lighted navigation buoys.
- 5. Construction or operational personnel shall not fish within 1000 yards of any domestic or commercial fishery area. Boundaries to mark these areas shall be posted by the Agency.



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6. Waterbodies that are particularly vulnerable to overfishing shall be posted by the Agency or other government authorities as no fishing areas.
7. Fishing by pipeline personnel shall not be permitted during winter within 1000 yards of any known well-defined overwintering areas of fish. Areas with scheduled closed fishing times shall be posted by the Agency.
8. Pipeline construction and operational activities shall be scheduled so they do not disrupt seasonal fisheries along the route.
9. Where pipeline activities or facilities are within one mile of any well-defined domestic, sport or commercial fishery sites, the Company shall provide a description of its activity in the area to the local people taking part in the fishery. Any modifications to the Company's plans requested by the local people shall then be worked out in consultation with representatives from the fishery participants, Company and responsible government authorities.

Site Access

10. Where local people and government authorities agree that pipeline access roads to previously inaccessible areas are beneficial to local fisheries, such roads shall be left intact after pipeline construction is completed. All other pipeline access shall be blocked and the disturbed areas shall be rehabilitated after pipeline use of the access route is completed.

Control of Fishing

11. No sport fishing shall be permitted from pipeline structures, or from structures connected to all modes of pipeline operations and maintenance, or within the pipeline right-of-way.
12. Pipeline personnel shall not be permitted to fish in waterbodies presently utilized by sport, domestic and commercial fisheries without consultation with the operators of said fisheries and with government authorities. Maps and



Fish Protection  
Fisheries and Fishing

descriptions of any excluded areas shall be posted in pipeline camps and explained in worker environmental protection orientation programs.

13. In addition to government fishery enforcement officers, the Company shall ensure that all fishery regulations are followed by all personnel related to the pipeline project.
14. Local government authorities should close any area for fishing at any time if there is a threat of over-exploitation of the resource present.
15. In some areas, it may be necessary to restrict the type of sport fishing equipment permitted. (e.g. artificial flies rather than triple-hooked lures).
16. In some areas, the use of live bait may have to be limited in order to control the transfer of undesirable fish species, and/or fish diseases, parasites, etc., from one water system to another.





SITE-SPECIFIC RECOMMENDATIONS - FISH

The following recommendations identify some specific concerns for fish and fisheries protection along routes and associated work facilities that have been proposed by Foothills and Arctic Gas. This incomplete listing is designed to illustrate the kinds of situations where adjustment of the project at final design could reduce or avoid impacts on fish.

GENERAL

1. All fuel and chemical storage areas and major camps shall be located at least 1,000 feet from any river bank or shore. Camp and fuel storage facilities on river bank work pads shall be located on the part of a work pad farthest from the channel bank. This applies principally in the Mackenzie Delta.
2. Stockpile sites shall be set back at least 300 feet from any river bank or shore.
3. Wharf sites shall be located at least 1/4 mile from any stream or river mouth.
4. A buffer strip of at least 300 feet of undisturbed terrain should be maintained between any pipeline or related facility and any major waterbody, bank or shore. River crossing work pads and wharf sites are exceptions to this condition.

ARCTIC GAS PROPOSALS, YUKON COAST

5. Water should not be removed in winter from any fish overwintering areas in springs or rivers of the North Slope. In areas of severe water shortage exceptions may be granted by the agency for camp use only and where the volume of water to be removed will not adversely affect the fish.

Craig Creek

6. The migration route upstream to overwintering areas shall be maintained.



Fish Protection  
Site-Specific Recommendations - Fish

Fish Creek

7. No gravel shall be removed from this creek.
8. The headwater spawning and overwintering areas and the ground water sources of the creek shall be designated as an excluded area for fisheries and industrial development.
9. Consideration should be given to moving the Komakuk beach staging, area and associated developments away from the mouth of this creek.

Malcolm River

10. No water shall be removed from the open water area downstream of the crossing during winter.
11. The proposed gravel borrow site on the east side of the river upstream of the open water site shall be relocated.

Firth River

12. No water shall be removed from open water areas in the vicinity of the crossing during winter.

Spring River

13. No water shall be removed from open water areas in the vicinity of the proposed pipeline crossing during winter.
14. The borrow site shall be moved out of the channel zone of the river.

Crow River

15. Aufeis areas shall be protected from water removal or other construction activities.
16. Construction activities on the river shall be terminated well in advance of the upstream migration of arctic grayling.

Babbage River

17. No water removal shall be permitted from open water areas during winter.



Fish Protection  
Site-Specific Recommendations - Fish

18. Construction or other activities at the crossing site shall be permitted only in winter between freeze-up and break-up.

Walking River

19. Special attention should be paid to erosion control methods to control silt from access roads in this area to prevent disruption to grayling overwintering areas.
20. No disruption of the domestic fishery at the mouth of the river shall be permitted.
21. The long established log wind-breaks associated with traditional domestic fishing sites on spits (Shingle Point, Trent Bay, Shoalwater Bay, Trent Island etc.) shall be preserved.

ARCTIC GAS PROPOSALS, INTERIOR ROUTE

Old Crow River

22. If possible the crossing shall be constructed in the period January to March to avoid salmon migrations.
23. Historic and present domestic fishing activities and camps shall not be disturbed.

Driftwood River

24. Re-location of the crossing site shall be considered since the present proposal crosses a grayling spawning area.
25. No water shall be used in winter from ground water sources feeding the river.

Bell River

26. A more complete evaluation of the fish resources in this system shall be carried out since it appears to have excellent winter habitat. Special measures shall be taken to protect any overwintering areas found.





Fish Protection  
Site-Specific Recommendations - Fish

Rat River

27. No water removal from ground water sources feeding into the river shall be permitted during winter. Migration of fish to the headwaters shall be maintained.

ARCTIC GAS PROPOSALS, MACKENZIE DELTA (CROSS-DELTA, NIGLINTGAK)

28. Dredging and trenching in delta channels shall be done in a time-staggered manner to ensure that channels are kept open to fish migrations. The requirement will be particularly important during the period from 15 July to 14 November.
29. At each channel crossing, fish runs shall be monitored 1 year before construction and during construction, upstream and downstream of the crossing, to ensure that migrations are not being unacceptably delayed.

ARCTIC GAS PROPOSALS, CIRCUMDELTA PRIME ROUTE

30. At MP 376.0, the gravel pit in the Willow River Channel shall not be permitted.
31. At MP 408.3, the camp and compressor station shall be set back 1,000 feet from the Rat River, an important arctic char stream. The gravel pit shall be moved off the flood plain. Now water extraction operations shall take place on this river in winter.

ARCTIC GAS PROPOSALS, MACKENZIE VALLEY PIPELINE

32. At MP 11.0, the crossing of the connecting channel between the two lakes shall be constructed in winter.
33. At MP 23.5, the crossing on the outlet of a large unnamed delta lake to the Mackenzie shall be constructed in late winter.
34. At MP 250.0, if overwintering fish are found at the Tieda River crossing site, the crossing shall be moved, built in summer between 15 July to 15 August (if otherwise acceptable) or other measures applied to prevent impact on fish.



Fish Protection  
Site-Specific Recommendations - Fish

35. At Mp 269.0, there are probably fish overwintering at the Loon River crossing site. Manuel and Rorey Lakes upstream support domestic fisheries. This crossing shall be moved, constructed between 15 July to 15 August (if otherwise acceptable) or other measures applied to protect fish.
36. At MP 388.0, borrow operations shall not be permitted in the channel of Francis Creek.
37. At MP 456.0, if overwintering fish are found at the Big Smith Creek crossing site the crossing shall be rerouted, built between 15 July and 15 August (if otherwise acceptable) or other measures applied to protect fish.



Fish Protection  
Site-Specific Recommendations - Fish

38. At MP 556.5, the crossing of Hodgson Creek is a known overwintering area. Therefore, it shall be relocated, built between 15 July and 15 August (if otherwise acceptable), or disruptions mitigated in some other way.

FOOTHILLS PROPOSAL

39. Recommendations 27 and 28 also apply to any Foothills construction in the delta.
40. The work pads for the Swimming Point crossing of the East Channel shall be a minimum of 1/2 mile upstream from the mouth of Holmes Creek.
41. The two road crossings and one pipeline crossing proposed for Holmes Creek should be eliminated if at all possible by re-routing. If this is not possible, at least one road crossing should be eliminated by moving the junction of the newly proposed access road and the pipeline right-of-way approximately one mile to the north west.
42. At MP 748.8, the borrow site in the channel of Trout River shall not be permitted.
43. At MP 810.0, the borrow site on the Kakisa River shall not be permitted.
44. At MP 374-388, the construction access road along the proposed Mackenzie Highway will require culverts in Heluva and Francis Creeks and a bridge over Canyon Creek that ensure water velocity below 3 feet per second at maximum discharge to allow fish migration.

SOURCES OF INFORMATION

1. Transcripts, Exhibits, Basic Documents

CARC           Steigenberger, L.W., Stein, J.N. (103-06),  
                  supplemented by additional information from them.





Fish Protection  
Site-Specific Recommendations - Fish

2. Reports

Jones M.L.

- n.d. Water availability along the proposed Arctoc Gas pipeline route from Prudhoe Bay, Alaska to the Mackenzie Delta, N.W.T., Aquatic Environments Ltd.

McCart, P.J.

- 1974 Fisheries research associated with proposed gas pipeline routes in Alaska, Yukon and Northwest Territories; Biological Report Series, Vol. 15.



## VEGETATION AND TIMBER

### GENERAL RECOMMENDATIONS

The government should develop timber harvesting policies for the pipeline project region that integrate and reflect the varied and competing demands for the forestry resources. The long term availability of timber for community requirements should not be jeopardized, especially to satisfy short term requirements.

### DISCUSSION

The construction of the pipeline will result in the loss of both tundra and boreal vegetation. This loss, while of concern, is unavoidable but can be minimized with appropriate construction procedures (see "Clearing" and "Snow Roads"). The major concern with respect to the vegetation is the increased demand for timber resources that can be expected if the pipeline is approved. Pilings will be required for pipeline construction, gas plant construction, and community expansion. These pilings will most likely be supplied from local sources by northern entrepreneurs.

There are large volumes of timber in the Northwest Territories that are potentially harvestable but most of these are located in the Liard River region south of the South Nahanni River (Hirvonen, 1975). There is much less timber available in the Mackenzie Valley north from Fort Simpson and what is available is concentrated along the rivers in narrow alluvial stands. Though these alluvial stands represent but a very small proportion of the total area, they are important because their rich soils support some of the best stands of timber. The harvesting of the more northern stands on a sustained yield basis is questionable for two reasons. First, methods of successfully reforesting such cut-over areas have yet to be developed for much of the Mackenzie Valley.

"[T]he combination of climatic, soil and permafrost conditions are unlike those in the south and in this respect information on regeneration problems is lacking. Adequate research is needed to prevent a renewable resource being inadvertently turned into a non-renewable one" (Hirvonen, 1975, p.40).

Second, even if reforestation methods were available, the time required for a tree to reach maturity is very long; over 200 years is required to grow an average tree of uncertain quality. These problems must be kept in mind when weighing short term industrial demands for timber against the long term domestic requirements of northern communities.



Northern forests have values other than being a source of timber. They play an integral part in soil stability, not only on steep slopes and river banks but in permafrost areas as well. The relationship of the vegetation to soil stability and the implications of its removal must be fully understood and respected in the implementation of any logging program. The forest is also important to wildlife as shelter and a source of food and, because of its location along the edges of rivers, as an aesthetic and recreation resource.

The forests of the Mackenzie Valley must therefore be used in such a way that the various and sometimes incompatible needs are met. Precipitous exploitation must be avoided and the long term values of the resource must not be sacrificed to meet the short term requirements of industrial development.

### RECOMMENDATIONS

See General Recommendation above.

### SOURCES OF INFORMATION

#### Reports

Hirvonen, R.P.

1975 Forest resources of the Mackenzie River valley,  
NWT; Forest Management Institute, DOE; Infor Rept.  
FMR-X-71, Study FM-112.





## PHYSICAL ENVIRONMENT

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## TERRAIN, LANDSCAPE AND WATERBODIES

### GENERAL RECOMMENDATION

The pipeline project shall be located, designed, built and operated so as to limit physical disturbance to the landscape, waterbodies and the land surface, leaving as much as possible of the surrounding area in its natural state.

### DISCUSSION

The pipeline project inevitably will cause major short term and some long term disturbance of land and waterbodies and degradation of landscape values. The following general approaches for limiting these impacts are proposed for the guidance of the Company and the Agency in design and design review.

### RECOMMENDATIONS

1. Land and waterbodies should not be unnecessarily disturbed: all land-use aspects of the project (and not simply those in areas of high sensitivity or visibility) shall be carried out in a neat and tidy manner.
2. The areas of land and water that are used by any part of the project or physically disturbed by the project should be kept to a minimum. This principle applies to rights-of-way, temporary access routes, permanent roads, borrow areas, facilities areas and any other levels used for the project.
3. The Company should justify during design review the need for any width of cleared right-of-way in excess of 60 feet in terms of its site-specific construction plan.
4. Any overlap of the project lands onto lands and waterbodies used by or useful to man for purposes other than the pipeline shall be minimized and strictly controlled.
5. The visual, aesthetic values of landscape and waterbodies shall be protected and visual impacts minimized. This principle is important in location, design, construction and operation of the pipeline and attendant works and in rehabilitation of lands used for the pipeline.
6. Undisturbed wilderness areas should be avoided or should not be unnecessarily disturbed. In all areas, the project should be adjusted to protect the "natural" or wilderness attributes of landscape and waterbodies.



7. Land and water resources that may be in short supply should be conserved or used prudently, and conflicts should be avoided between such use for the pipeline project and other present or future use.
8. Disturbance of the ground surface, together with disturbance of the organic mat and vegetation that protect it, should be minimized as a means of reducing or avoiding a wide range of environmental impacts and engineering problems. More specific recommendations in this regard are contained in "Grading and Ground Protection", "Vegetation Clearing", and "Snow Roads".
9. Where the project, of necessity, involves disturbance of land or waterbodies, measures should be taken to stabilize, restore and rehabilitate the area. Specific recommendations in this regard are contained in "Revegetation", "Drainage and Erosion Control", "Slope Stability" and other sections.
10. The pipeline and facilities shall be so located as to avoid sensitive terrain, such as areas with potential for slope failure, erosion, subsidence through thaw of high-ice soils, frost heave etc, as well as areas where project-initiated terrain disturbance could adversely affect nearby waterbodies or lands of high environmental concern.
11. The pipeline and facilities shall be located, designed and built so as to minimize the need for repairs, and particularly contingency repairs, which could be damaging to terrain and waterbodies. In this regard, designs may need to be more conservative than in normal pipeline engineering practice.
12. In view of the particular environmental, land-use and aesthetic or recreational values of lakes, streams and valleys containing streams and in view of the importance of limiting environmental impacts on waterbodies, special measures are needed to protect the waterbodies and their surroundings from disturbance by the pipeline project.
  - a) Location is particularly important for works and activities that impinge on waterbodies, valleys, shores and banks. This applies to pipeline crossings, roads, water intakes, sewage and waste disposal sites, wharves, stock-pile sites, work pads, camps, compressor stations and borrow areas. Wherever possible, facilities (particularly groups of facilities) should be kept out of valleys and away from waterbodies, by the distances specified elsewhere in this submission, and buffer strips should be left undisturbed. The number of water crossings should be minimized and pipeline or roads should avoid closely paralleling watercourses.





Physical Environment  
Terrain, Landscape, Waterbodies

- b) Works and activities which encroach upon waterbodies, such as pipeline crossings, road crossings and water intakes, should be designed to minimize changes in water quality, flow or level, or morphology of the channel or bank.
  - c) It is particularly important to adjust all works and land use activities on river banks, in valleys, and on sloping valley walls so as to minimize disturbance of the ground surface. Where disturbance has occurred, special precautions shall be taken to stabilize the ground surface and to prevent entry of silt-laden run off into the waterbody.
  - d) The potential for the pipeline project to cause land use conflicts and for unacceptable damage to aesthetic values or degradation of wilderness or areas important for recreation is particularly great in valleys and around waterbodies. The project should be adjusted to avoid or minimize impacts of this nature.
13. The swamps, marshes, and wetlands that form a large part of the permafrost landscape along the pipeline route are ecologically important and sensitive. They must not be simply regarded as wasteland but are to be accorded the same level of protection by the pipeline project as other elements of the landscape.
14. The combined impact of the pipeline project and any nearby developments (e.g. highway) on land, waterbodies and landscape is controlled to a considerable degree by the distance between them. Consequently, the location of the pipeline route, facilities and roads should be adjusted to avoid or reduce such cumulative impacts. This adjustment can only be done on a site by site basis and is particularly important where two or more facilities encroach upon a valley or waterbody and areas important in terms of wilderness, aesthetics or recreation.



WATER QUALITY

GENERAL RECOMMENDATION

During construction and operation of a gas pipeline, existing surface water quality criteria shall be maintained within the limits set out below. Additional limits on other parameters may be added at some later date.

DISCUSSION

Effluent standards provide an effective basis for achieving environmental protection. The implementation of these standards require judgement, however, in determining which waterways the treated effluent can be released into without harming the environment. Such things as watercourse volume, flow or exchange rate, downstream water use and ambient water chemistry must be considered. In some cases, retention ponds which can hold effluent until seasonally favourable release conditions exist (e.g. high flow rates in spring), may be necessary. At some effluent outfalls, diffusor systems may be required to ensure adequate mixing takes place, and water quality is maintained within the required limits.

RECOMMENDATIONS

1. The following limits for water quality shall be adhered to by the Company wherever effluent is released into a waterbody:
  - a) Bacteria - At least 90% of the samples (not less than five samples in any consecutive 30-day period) shall have a total coliform density of less than 5000/100 ml and a fecal coliform density of less than 1000/100 ml.

Comment: These standards are upper maximums that may have to be substantially altered to guarantee that public health is protected. (also see "Wastewater and Sewage: Camps and Facilities)

- b) Dissolved Oxygen - not below 6.0 mg/l. If natural conditions are below 6.0 mg/l, effluent shall not be released into the waterbody unless the Company can demonstrate that discharge will not adversely deplete the oxygen level.



Physical Environment  
Water Quality

- c) pH - shall not be altered by more than 0.5 and shall be maintained in the 6.5 - 8.5 range.
  - d) Temperature - shall not be altered by more than 3°C.
  - e) Odour - not to exceed 8 at 20°C.
  - f) Colour - not to be increased more than 30 colour units above background.
  - g) Turbidity (see "Suspended Sediment Standards").
  - h) Phenolics - shall not exceed 0.005 ppm. Fish flesh shall not have any detectable change in taste or odour as determined by a government agency taste panel.
  - i) Oils and Greases - No visible irridescent sheen shall be present.
  - j) Inorganics -
    - Boron - 0.5 mg/l      Manganese 0.05 mg/l      Sulphide - 0.05 mg/l
    - Copper - 0.02 mg/l      Nitrogen - 1.0 mg/l      Zinc - 0.05 mg/l
    - Fluoride - 1.5 mg/l      Phosphorous - 0.15 mg/l
    - Iron - 0.3 mg/l      Sodium - 30-75 mg/l
  - k) Pesticides - Only air fogging pesticides shall be permitted. No persistent chemicals shall be used.
  - l) Toxic Chemicals -
    - Arsenic - 0.01 mg/l      Lead - 0.015 mg/l
    - Barium - 1.0 mg/l      Mercury - 0.001 mg/l
    - Cadmium - 0.01 mg/l      Selenium - 0.01 mg/l
    - Chromium - 0.05 mg/l      Silver - 0.05 mg/l
    - Cyanide - 0.01 mg/l
2. Sampling for the water quality criteria will be done at 10 points determined by the method outlined in "Suspended Sediment Standards". Dissolved oxygen will be measured in stream pools and lake low points where depleted oxygen levels could be expected because of organic loading.
3. Testing for the parameters listed shall be according to methods outlined in "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association, 1974).





Physical Environment  
Water Quality

4. Effluent discharge points shall not be within 1 mile of any domestic or commercial fishing area on a lake or within 1 mile upstream of such a site in a flowing watercourse unless the Company can demonstrate that the water quality can be maintained at satisfactory levels if the outfall is located closer to the fishing activity.
5. Effluent discharge points shall not be within 1 mile of any potable water-use site on a lake or within 1 mile upstream of any potable water-use site on a flowing watercourse unless the Company can demonstrate that the water quality can be maintained at satisfactory levels if the outfall is located closer to the potable water use areas.

SOURCES OF INFORMATION

2. Reports

Government of Alberta

1970 Surface water quality criteria.

American Public Health Association

1974 Standard methods for the examination of water and wastewater, 13th Edition.

National Academy of Sciences

1972. Water quality criteria, A report of the Committee on Water Quality Control.



AIR QUALITY

GENERAL RECOMMENDATION

The Company shall construct and operate the pipeline in such a way that the impact on air quality is kept to a minimum and does not affect man's senses of sight or smell, nor the health of plants, animals or aquatic ecosystems.

DISCUSSION

Air quality changes are generally temporary and localized in nature and are not therefore considered one of the most serious environmental problems associated with the pipeline project. However, air quality degradation affecting the senses of sight and smell is still of concern because of possible impact at the local level and because of the long life of the project.

Visibility could be affected by dust and combustion emissions. Dust from borrow excavation and processing and from transportation will mainly be a local and temporary problem in and around settlements.

Combustion emissions could result in ice fog which forms when the very cold, calm air characteristic of northern winters, cannot contain the amounts of water vapour and steam generated by the combustion of hydrocarbon fuels. Although it is expected that the high exhaust gas temperatures and velocities from compressor station stacks will carry the emission above the inversion layer, there may be an increased incidence of ice fog around compressor stations (PAAG, pp.324-35). This could affect public transportation and communities but the degree of impact will depend on final location of facilities and on wind velocity.

Emissions from construction equipment and vehicles are generated at lower elevations and lower temperatures with much less likelihood of dispersion above even shallow inversion layers. These emissions can be eye and throat irritants and can be toxic to plants and animals. As inversion conditions persist, pollutants accumulate and exceed ambient air quality objectives even though emission standards for individual combustion sources may be met.

Unpleasant odours will result from the turnover of water in sewage lagoons around spring breakup, but should persist only a few days. The only other sources of unpleasant odour will be



construction equipment and vehicles, especially if not properly serviced. Incinerators and compressor stations should produce relatively odourless emissions, though the large volumes involved necessitate efficient combustion if odours are to be avoided.

Sulphur dioxide is not considered a problem as far as the pipeline is concerned because the Applicants propose no processing or refining over the length of the route. Except for the possibility of a pipeline break, their operational emissions arise only from compressor stations. These will include unburnt natural gas, exhaust gases and steam. Sulphur dioxide emissions here are low because the gas so far discovered is sweet and very low in sulphur content and the pipeline carriers require low sulphur content gas before it is accepted for transmission. Arctic Gas has indicated that it will comply with the "maximum permissible" and "maximum desirable" long term averaged ceilings for sulphur dioxide (Koskimaki, 32:4141-42).

Nitrogen oxides are a more serious concern. From recent simulations conducted by Western Research and Development Ltd. (1975), it is clear that the maximum acceptable level of 0.11 ppm of nitrogen oxide per 24 hour period could frequently be exceeded.

#### RECOMMENDATIONS

1. To avoid creating dust in or adjacent to communities, inhabited private property and public facilities, the Company shall carry out dust-control measures (e.g. spreading calcium chloride). Such measures must be approved by the Agency, and agreed to by local residents.
2. If the Company cannot satisfy the Agency that downdraft effects at compressor stations will be overcome by high exit stack velocities, chimney stacks for main turbines, refrigerating turbines and electrical generating turbines at compressor stations shall be at least 1.75 times the height of the building housing the appropriate unit (Western Research and Development Ltd., p.5).





Physical Environment  
Air Quality

3. Where people or transportation facilities could be affected by ice fog visibility problems aggravated by operation of a compressor station the Company shall submit to the Agency for approval, an analysis and data substantiating the air quality characteristics of their proposed location.
4. The Company, in complying with the Clean Air Act, shall not exceed "maximum desirable" long term averaged ceilings for any pollutants (see "Appendix").
5. Although it appears the Company may have difficulty meeting maximum desirable objectives for nitrogen oxides, these objectives shall nonetheless apply because they "provide a basis for an anti-degradation policy for the unpolluted parts of the country" (see "Appendix"). As part of final design submission, the Company shall present to the Agency its design specifications and relevant data and analyses to justify any exemption it may request from these requirements in operating its compressor stations.
6. The Company shall monitor ambient air quality of each compressor station and chiller station within six months of start-up, and thereafter at least once a year or more frequently as required by the Agency. Testing procedures including timing shall be approved by the Agency.
7. Emissions from machinery used by the pipeline Company shall meet the desirable air quality standards defined in the Clean Air Act, Ambient Air Quality Objectives for Air Contaminants, 14 May 1974.
8. Emissions from incinerators shall comply with the standards as described in "Solid Wastes: Camps and Facilities".

SOURCES OF INFORMATION

1. Transcripts, Exhibits, Basic Documents

CAGPL      Koskimaki, C.M. (32:4141-42); Minning, G.  
                 (78:11665-73)



2. Reports

Western Research and Development Limited

- 1975     An evaluation of the air quality changes associated with construction of a pipeline through the Mackenzie Valley; including letter of transmittal from D.M. Leahey; prepared for CAGSL; Calgary.



AIR QUALITY - APPENDIX

NATIONAL AIR QUALITY OBJECTIVES

DEFINITIONS

Maximum desirable levels define the long term goal for air quality and provide a basis for an anti-degradation policy for the unpolluted parts of the country and for the continuing development of control technology.

Maximum acceptable levels are intended to provide adequate protection against effects on soil, water, vegetation, materials, visibility, personal comfort and well-being. They represent the realistic objective today for all parts of Canada. When these levels are exceeded control action by a regulatory agency is indicated.

Maximum tolerable levels denote concentrations of air contaminants that require abatement without delay to avoid further deterioration of conditions to an air quality that endangers the prevailing life-style or, ultimately, to an air quality that poses a substantial risk to public health.

Compiled from The Clean Air Act and Schedules, as ammended to August 1976 by Environmental Protection Service, DOE, Canada.





## CANADA

# AMBIENT AIR QUALITY OBJECTIVES (as of May 17, 1976)

Contaminant	Max. Desirable Level	Max. Acceptable Level	Max. Tolerable Level
Sulphur Dioxide (Annual) (24 hrs.) (1 hour)	30 $\mu\text{g}/\text{m}^3$ (.01 ppm) 150 $\mu\text{g}/\text{m}^3$ (.06 ppm) 450 $\mu\text{g}/\text{m}^3$ (.17 ppm)	60 $\mu\text{g}/\text{m}^3$ (.02 ppm) 300 $\mu\text{g}/\text{m}^3$ (.11 ppm) 900 $\mu\text{g}/\text{m}^3$ (.34 ppm)	800 $\mu\text{g}/\text{m}^3$ (.31 ppm) *
Suspended Particulate Matter (Annual) (24 hrs.)	60 $\mu\text{g}/\text{m}^3$ -----	70 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	400 $\mu\text{g}/\text{m}^3$ *
Carbon Monoxide (8 hours) (1 hour)	6 $\text{mg}/\text{m}^3$ ( 5 ppm) 15 $\text{mg}/\text{m}^3$ (13 ppm)	15 $\text{mg}/\text{m}^3$ (13 ppm) 35 $\text{mg}/\text{m}^3$ (30 ppm)	20 $\text{mg}/\text{m}^3$ (18 ppm) *
Oxidants (Ozone) (Annual) (24 hrs) (1 hour)	----- 30 $\mu\text{g}/\text{m}^3$ (.015 ppm) 100 $\mu\text{g}/\text{m}^3$ ( .05 ppm)	30 $\mu\text{g}/\text{m}^3$ (.015 ppm) 50 $\mu\text{g}/\text{m}^3$ (.025 ppm) 160 $\mu\text{g}/\text{m}^3$ (.08 ppm)	----- 300 $\mu\text{g}/\text{m}^3$ (.15 ppm) *
Nitrogen Dioxide (Annual) (24 hrs.) (1 hour)	60 $\mu\text{g}/\text{m}^3$ (.03 ppm) ----- -----	100 $\mu\text{g}/\text{m}^3$ (.05 ppm) 200 $\mu\text{g}/\text{m}^3$ (.11 ppm) 400 $\mu\text{g}/\text{m}^3$ (.21 ppm)	----- 300 $\mu\text{g}/\text{m}^3$ (.16 ppm) * 1000 $\mu\text{g}/\text{m}^3$ (.53 ppm) *
SO <sub>2</sub> times Particulate (24 hrs.)	-----	-----	125000 ( $\mu\text{g}/\text{m}^3$ ) <sup>2</sup> **

Notes: \* - recently proposed

\*\* - recently proposed, final promulgation subject to establishment of maximum acceptable level.

Compiled from The Clean Air Act and Schedules, as amended to August 1976 by Environmental Protection Service, DOE, Canada.



BORROW RESOURCES

GENERAL RECOMMENDATIONS

The Company shall use the borrow resources of the Mackenzie Valley and northern Yukon as sparingly and prudently as possible.

The Government should, in areas of anticipated heavy demand for borrow materials, develop management plans and procedures to control allocation of the resource.

DISCUSSION

As with most large engineering projects, construction of the pipeline will require the use of large amounts of locally derived construction materials including rock, gravel and soil. This demand will, in turn, lead to the development of borrow pits and quarries for the extraction of the necessary materials.

The principal impacts of the extraction and use of these materials will be:

- a. conflicts with other users, both present and future, and
- b. the excessive consumption of a locally scarce resource.

Arctic Gas has estimated its requirements at 32 million cubic yards of borrow of all grades and types. Foothills most recent estimates, in its revised Application, are 17 million cubic yards, plus 400,000 cubic yards for construction of the Great Slave Lake community service pipelines. No estimates of the long term requirements for maintenance purposes have been presented by either Applicant. The difference between the estimated requirements of the two Applicants results from differences in the length of large diameter pipeline and in terrain conditions in certain areas. The facilities associated with the pipeline such as roads, airstrips, work pads, construction camps, stockpiles, compressor stations, wharves etc. have particularly large requirements, more so than the pipeline itself. As granular materials are generally not available in sufficient quantities on the right-of-way, they have to be mined elsewhere and trucked to wherever they are needed.



Physical Environment  
Borrow Resources

The major competing requirements for borrow materials that are presently predictable comprise community development, Mackenzie and Dempster Highways construction, petroleum exploration and gas production in the Mackenzie Delta area. Further requirements for the future may include looping of the gas line, an oil pipeline, additional roads and airfields, hydro-electric developments, port development and possibly a railway.

In general it appears that there will be no serious shortages of borrow materials. The main exception to this is in the Richards Island-Mackenzie Delta area, where the overall demand for borrow materials is high at present and is expected to increase. Also in that region, the potential long term demand for borrow materials is clearly in excess of the local supplies and some form of resource allocation plan will be essential. The Cross-Delta segment of Arctic Gas' line to Prudhoe Bay requires very substantial withdrawals of borrow in an area of acute shortage. Foothills' proposal to construct during summer the northernmost 50 miles of its route, 30 miles of which lie in the areas of greatest shortage, would definitely aggravate the question of granular material supply in the Richards Island-Mackenzie Delta region.

There may be local shortage of certain high-grade materials in the Mackenzie Valley. Five localities -- Inuvik, Fort Good Hope, Norman Wells and, of lesser potential, Fort Norman and Fort McPherson -- were identified by the Pipeline Application Assessment Group as areas where conflict between the pipeline Company and the community could arise. Adjustments currently being made by Arctic Gas should avoid these potential problems; to date, however, revised pit locations have not been received.

RECOMMENDATIONS: THE COMPANY

1. Consistent with good engineering practice, the Company shall conserve the supplies of borrow materials in the pipeline corridor:
  - a. by making the minimum possible use of high grade materials;
  - b. by avoiding areas of potential shortages or heavy conflicting demands for borrow materials;





Physical Environment  
Borrow Resources

- c. by prosecuting a vigorous search for more borrow materials in areas of potential shortages; and
  - d. by adopting a design, construction mode and construction plan that will minimize the short and long term requirements for borrow materials.
2. The Company shall minimize its use of land:
- a. by using existing borrow pits and quarries in preference to opening up new areas;
  - b. by selecting sites and planning pit development so as to permit efficient use of the sites and the deposits and to avoid opening pits in unsuitable materials;
  - c. by locating plant, storage facilities, spoil piles or stockpiled topsoil within the pit area rather than on adjacent ground; and
  - d. by burying waste from the borrow operation within the pit area at the termination of its use.
3. The following specific conservation measures should be adopted:
- a. When applying to remove granular materials from certain locations, the Company should provide an objective appraisal of the resources in the surrounding area, so that the impact on the resource can be assessed on an area basis rather than on an individual pit basis. Particular accommodation shall be made for local use of readily accessible resources.
  - b. The potential conflicts over borrow use at Inuvik, Fort Good Hope, Norman Wells and similar locations must be eliminated before final design approval.
  - c. If final design proposals involve a Cross-Delta pipeline, as much of the granular material requirements as possible should be supplied from the west side of the Delta. To reduce environmental disturbance, this borrow should be stockpiled in winter.

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RECOMMENDATION: THE GOVERNMENT

4. The Government should conserve borrow supplies in the Mackenzie Valley and northern Yukon:
  - a. by identifying areas of potential shortage or heavy conflicting demands for borrow materials;
  - b. by protecting the supplies needed for settlements, highway construction and future industrial developments;
  - c. by developing special management plans and procedures for areas of anticipated shortages of borrow materials (e.g. Richards Island-Mackenzie Delta area); and
  - d. by planning the supply of borrow materials that will be needed for future transportation developments, such as looping the gas pipeline and the construction of an oil pipeline.

SOURCES OF INFORMATION

1. Transcripts, Exhibits, Basic Documents

CAGPL	Horte, V. (45:5912-13); Minning, G. (78:11620-21; 79:11682-85; 81:12029; 82:12169-72; 83:12481; 130:19760-70; 132:20047-55); Mollard, J. (17:1976); Williams, G.L. (83:12375-76, 12481; 130:19776-78)
FH	Bauer, A.F. and Mirosh, E.A. (62:8867-68; 66:9685-99); Bouckhout, C.W. (86:12894-95); Drew, C.W. (87:13066); Ellwood, J. (C-36:3550-52)
Delta	Faulkner, R.L. (115:17486-91); Mainland, G.G. (114:17373-74)
Comm. C.	Inglis, J.T. (128-129:19589-19731); Lewis, C.P. (124:18908-10)
Exhibit	303: Minning, G. 1975. Preferred borrow sites and quantities of material required for construction along various routes (CAGPL).



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Borrow Resources

495: Minning, G. 1976. Borrow requirements and borrow deposits, Mackenzie Delta area (CAGPL).

497: Minning, G. 1976. Estimated quantities of the material resources required in construction of the proposed pipeline (CAGPL).

CAGPL      Application (as amended to 8 March 1976); Sections 13.a,a 5.4, 14.d.N. 7.2.3.

Responses; Question 28 and Appendix A.

FH          Application (as amended to 23 August 1976); Section 3D-3.3.

PAAG        Section 10.3

## 2. Reports

Loram International Ltd.

1976        Foothills Pipe Lines Ltd.; Granular material development, for Kusters Engineering Ltd., (NEB exhibit N-PD-493).

NESCL

1975a      Reconnaissance of the Alyeska Pipeline material source borrow methods and an evaluation of these methods with respect to aquatic habitats.

1975b      Pipeline related borrow sites, Cross-Delta alternative route and east of Fort Simpson realignment (CAGSL).

[Owen, E.B.]

n.d.        Mackenzie Valley granular material inventory: correlations of material availability and estimated requirements, DIAND.





NOISE

GENERAL RECOMMENDATIONS

The Company shall take all feasible measures to alternate noise levels to preserve the natural state of the environment.

In establishing noise levels, the government should establish maximum levels for some distance from the source rather than some distance from the impacted element.

DISCUSSION

There are six sources of noise that are of concern. These are noise of operating compressor stations, noise associated with gas line blowdown, noise or vibration from the trunkline at water crossings, construction noise, transportation noise and blasting.

Except for pipeline vibration, each source has potential for major impact on people, birds, wildlife and the quiet of land in its natural state. Each source generates noise levels that will warrant ear protection or substantial distance between the worker and the source. These levels will range from 90 to 140 dBA or more. To place this in context it is worthy of note that in a treeless tundra environment one might expect noise levels around 20 dBA under calm conditions (National Research Council, 1976). The background level in an open alpine meadow with the rustling of grasses and brush stirred by the wind and the distant sound of tree movement was reported by Dailey and Redman (1975) to be about 30 dBA under low wind conditions of 3 to 5 miles per hour, but is about 35 dBA in a mature coniferous forest under the same conditions. They have also pointed out that the sound level to which a noise must be reduced before it is muffled by background noise is 15 dBA less than the background level of the setting. They further point out that a yell (78 dBA 50 feet from the source) under certain conditions can carry 20,000 feet before it falls below the background threshold level of a meadow and is not heard. It clearly follows in the light of pipeline project noise levels in the range of 90 to 150 dBA, that in the Mackenzie region there may be many occasions, particularly under calm, inversion conditions when project related noises have the potential to be heard over the background at distances up to several miles. Topographic, terrain, vegetative and meteorological conditions may of course diminish (as in the case cited) or increase the attenuation which otherwise is basically a reduction of 6dBA for each doubling of distance from a point source,





Operating compressor stations are the permanent sites of one of the highest intensity permanent and stationary noises associated with the project. Proposed Delta and North Slope sites have particularly great potential for disturbance to waterfowl and snow goose population and the Porcupine caribou herd (see "Wildlife Protection").

Maintenance blowdown with its potential startling effect upon wildlife is for the most part similarly confined to compressor station sites, but similar pipeline noises are generated elsewhere along the line, as in purging, for example, where people could be disturbed in their traditional pursuits. Recommendations and a fuller discussion of the concerns is found in "Compressor Station Noise" and "Blowdown Noise".

The noise of the operating pipeline buried under Shallow Bay has been discussed at the Inquiry as a concern for calving whales. Other noises associated with construction and maintenance are believed to be much greater threats to the whale population, though the final location of the buried pipe has potential to preclude some of the calving area from future use.

Pipeline construction will employ literally thousands of pieces of heavy equipment, machinery, vehicles and power tools. Crawler-type tractors, earth moving and ditching equipment, air compressors and drills to name just the most familiar, can generate noise in the 85-115 dBA range. That is the range in which the Canada Labour Code limits worker exposure. These noise levels will be generated at wharf construction sites on the Mackenzie River and at borrow pits up to several miles away as well as along the right-of-way. Somewhat lower intensities will be generated by road construction and haulage activities which will connect wharf sites, air strips, borrow pits, lakes (for water and snow harvesting) and the right-of-way. Thus disturbing noise levels have the potential to disturb wildlife and thereby interfere with traditional activities, such as trapping, over a wide area.

Construction noise will be accompanied by noise produced from associated transportation activities ranging from increased barge traffic to movement of supplies and personnel between wharves, stockpiles sites and camps and the right-of-way. Some material and certain personnel will move back and forth in the field by helicopter or fixed wing aircraft while greatly increased commercial air traffic will result. Monitoring and maintenance



activities will produce the major portion of post-construction transportation noises mainly from aircraft. The major concerns about disturbance raised at the Inquiry and discussed at length in the various sections on wildlife relate to the noise aspect of disturbance, particularly from aircraft, and air cushion vehicles (see "Wildlife Protection" and "Project Operation").

Blasting is the final noise concern and is of course related to construction. Its primary impact is disturbance to wildlife and birds and interference with traditional hunting. Early nesting gyrfalcons are particularly prone to winter construction blasting activities (see "Blasting").

It is evident that the pipeline will be a very noisy project over its total lifetime. Even at low absolute intensities noises may disturb wildlife and local people. Furthermore, land in its natural state and particularly the quiet, at times found therein, is subject to significant degradation if noise emission standards are based only on considerations for wildlife and health of people. There seems to be no justification for diminution of environmental quality because the environment does not contain outstanding characteristics other than quiet, though technical and economic feasibility of course inhibit achievement of the ideal.

Regulations may specify what noise levels are permissible at the structure or site to be protected, but this has the weakness of requiring for one environmental component attenuation that may not be adequate for another at even greater distances in the same direction (due to topographic effects, for example) or for other directions. This is the case in Alberta where levels are set for 10 feet from the nearest permanent residence. Furthermore, this approach means that if new sensitive elements in the environment are added (residences) or identified (nesting sites), then the noise source must be modified with the attendant technical difficulties and economic costs.

#### RECOMMENDATIONS

See General Recommendation



SOURCES OF INFORMATION

As quoted in the text. Also see sources of information in "Compressor Station Noise" and "Blowdown Noise".





SPECIAL LAND AREAS

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LAND RESERVES

## GENERAL RECOMMENDATION

To foster the protection of the wilderness and wildlife values that Canadians in general associate with "The North", it is recommended that, coincident with issuance of any right-of-way permit for a trunk gas pipeline in the Mackenzie Valley and/or Yukon, the Government of Canada should establish provisional land reserves to protect special interest areas from further industrial development.

This recommendation is not intended to restrict the activities of native people or to prejudice land claims. Rather it recognizes the lengthy period that may be required in settling all matters relating to land claims and the need to protect special areas from industrial activities or developments until this period is over and formal land reserves can be set up in the context of the land claims settlement.

The provisional land reserves recommended in the following, include areas formally or informally identified as National Parks, National Landmarks, IBP ecological reserves, and the International Wildlife range.

Also proposed as provisional land reserves are areas near the pipeline routes that are of concern for protection of wildlife or possible future recreation or park areas.

## DISCUSSION

## The Land Reservation Approach versus the Regulatory Approach

Recent comprehensive reports on land management north of 60°N have been prepared by Beauchamp and by Naysmith. Several of their perceptions relate to the fundamental choice of land withdrawal (reservation) versus regulation for protection and management of special areas.

To date, the regulatory approach has dominated in the North, mainly because the Land Use Regulations under the Territorial Lands Act have been the main vehicle governing the use and regulation of northern lands. Beauchamp has stressed that these regulations are a system of land use controls rather than a management scheme. The Territorial Lands Act allows for lands to be reserved by order-in-council for special areas such as recreation sites and public parks (under Section 19(b)), land considered to be for the general good of the native people (Section 19(d)), or lands for use as national forests or game



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preserves (Section 19(e)). But despite these withdrawal provisions in the Act, it is clear that the accompanying Land Use Regulations are not set up to preclude resource development in any area of the territories; instead, they are based fundamentally upon a managed-use concept.

Beauchamp stressed that the problem with the Land Use Regulations is a result of the lack of overall direction. Without a continuing planning process there are no criteria against which any regulatory system can be measured.

The present circumstances whereby an interim regulatory function precedes a planning function suggests that there also be an interim system of land withdrawals in advance of comprehensive land use plans. The main purpose of such a measure would be to reduce the loss of various candidate locations for parks, IBP sites or other special areas. Beauchamp stressed that there may not be time to think through and test the many possible structures for land use management in the North; the federal authority has to make political decisions today which must not preclude a later, more informed, and well-planned program.

### Inquiry Evidence Re Land Reservation

#### The Lands in Question

Numerous witnesses before the Inquiry have cited general and specific areas, scenic and wilderness values and important wildlife resources which they felt worthy of preservation and recommended could only or at best be protected through establishment of land reservations.

#### Arctic National Wildlife Range (Alaska)

Alaskan lands concern the Inquiry mainly insofar as they relate to the proposed Arctic International Wildlife Range and the management of the trans-boundary Porcupine caribou herd and a trans-boundary population of snow geese. The Arctic National Wildlife Range was established in 1960 (Collins 53:7666) and is a land use category less restrictive than a National or International Park. In 1972 8.8 of its 8.9 million acres was recommended for inclusion in the U.S. Wilderness Preservation System. More recently Senate Bill 2917, introduced at the request of the Secretary of the Interior under the terms of the





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Settlement Act provided for more than 80 million acres of "conservation" lands in Alaska, including a 3.76 million acre extension of the Arctic National Wildlife Range. This proposed addition and other wildlife refuges in Alaska were, under the terms of the Act, to be studied with a view to their preservation as wilderness areas (Brewer, 1975). These proposals have not yet been acted upon, primarily because the land settlement has not been finalized. However, the significance of the proposals remains, which is that it is seen to be in the public interest that such vast conservation areas (national forests, monuments, parks, wildlife ranges, wildlife refuges and wild and scenic rivers) be set aside and that such a substantial proportion be considered for wilderness-the highest preservation status that the United States can designate.

The Arctic National Wildlife Range in Alaska is of course the foundation upon which our Arctic International Wildlife Range has been proposed to be established. Other witnesses who spoke of this Alaskan base, expressing concern for its future integrity, praising its values and reflecting on the needs it fulfilled were: A.W. Banfield (94), L.C. Bliss (108), A.T. Bergerud, I. McTaggart-Cowan (107) P.C. Lent (106) and W. Parker (75).

Arctic International Wildlife Range (Alaska and Yukon)

Those witnesses speaking in favour of an Arctic International Wildlife Range which would consist of a major portion of the Northern Yukon, contiguous with the Alaskan Range included: A.T. Bergerud (110), L.C. Bliss (108), G.W. Calef (111), R. Leonard (53, 53A) I. McTaggart-Cowan (107, 108), T. Mosquin (C-64), C.H. Templeton (109) and A. Thompson (53, 53A).

The superb value of the North Slope in the Northern Yukon was repeatedly raised by witnesses in regards to wilderness, and wildlife, particularly caribou and waterfowl. The Environment Protection Board panel made a particularly eloquent case for protection, and Arctic Gas' environmental panel, even while not agreeing among themselves on the details with regards to species priorities, threats, crucial times and locations, implicitly proclaimed the natural resource value of the lands north of the Porcupine River. Other witnesses explicitly or implicitly praising the values found in the Northern Yukon were: V. Geist (53A), R.A. Hemstock (99) and E. Gourdeau (109: 16642;43), the latter referring to aesthetics. R.C. Isaak (1974) in his report





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on recreation highlighted the values of the Northern Yukon and recommended both the North Slope and Interior be retained as wilderness areas as did Templeton (104: 16,670).

A.W. Thompson and G.L. Collins (evidence in Chief, 53, 53A), co-founders of the Arctic Wildlife Range Society traced the history of the movement for creation of an International Range from the early fifties through to the endorsement of the efforts of the 1970 International Wildlife Range Conference in Whitehorse by the Minister of Indian and Northern Affairs (53:7275). Other significant endorsements of the Arctic International Wildlife Range goal have been by the International Union for Conservation of Nature and Natural Resources in 1972 (53:7274), the Canadian Wildlife Federation in 1975 (53:7274) and the Environment Protection Board in 1976 (Templeton 109: 16,668).

### Game and Bird Sanctuaries

Wildlife and bird sanctuaries were recognized as the best means of protecting some important populations. D.F. Sergeant recommended establishment of a White Whale Sanctuary in Mackenzie Bay (121: 18,486-87, 122: 18,683-85) essentially to protect their calving area. T.W. Barry recommended on extension to the Kendall Island Bird Sanctuary to protect prime nesting habitat that has been recognized since the original boundaries of the sanctuary were drawn. W.W.H. Gunn has also commented on the desirability of modifying boundaries on the basis of new information.

### International Biological Programme Ecological Reserves

Several witnesses who spoke of the desirability and benefits of the International Biological Programme (IBP) were: L.C. Bliss (46,112) V. Geist (53A), I. McTaggart-Cowan (109), N. Novakowski (102) and W.J. Stephen (138), but E.B. Peterson provided the most substantive justification in his testimony which described the history and objectives of the program in detail.

He pointed out that the main purpose of the International Biological Programme was to study the biological productivity of the earth's surface in relation to human welfare. This involves establishment of outdoor laboratories which will still be there for measurements and re-measurements over the long term. He also noted that proposed ecological reserves can range all the way



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from small, single-use areas for outright preservation of some important ecological feature to large multiple-use areas that can be zoned and managed to allow protection of ecological features and concurrent industrial development in adjacent zones within the reserve. One such type of reserve would act as a benchmark for documentation of the before and after situation of major engineering projects. This, Peterson said, demonstrated the relevance of the entire concept of ecological reserves to the subject matter of the Pipeline Inquiry.

### Other Special Areas

A wide variety of special areas have come in for favourable comment and recommendations for reservation as protection. These include some of the recreation areas listed in the section under that title, notably those with outstanding scenery, a proposed National Park centred on the Firth River watershed, wild rivers with historic significance such as the Rat, as well as historic sites and buildings.

The values cited in Section 10.4 of the PAAG Report (pp. 375-379) have been substantiated by a variety of witnesses, while the concerns have not been diminished by the evidence presented before the Inquiry.

### The Land Swap Concept

The Environment Protection Board (Vol.1, p. 3) writes "In accepting environmental change at any scale in some areas, the Board urges the total preservation of others of like type and quality and in quantity sufficient to assure the continuity of ecosystems characteristic of the north." I. McTaggart-Cowan, under cross-examination (109: 16,648) confirms this concept of land "swaps" for lands lost through pipeline pre-emption, but is careful (109: 16,661) to note that the Company (in his opinion) cannot have access to any land just by making a swap (emphasis added). He notes that in the "swap" concept they had acreages about the size of an average IBP site in mind. He further states (109: 16,658), "There is no possible trade-off for the North Slope in Canada." Templeton (109: 16,667) says if land trade-offs are impossible and land must be violated by a facility, a land use plan is imperative to spell out what activity can and cannot take place there in the future.



Wilderness Implications for Land Reservations

Numerous witnesses (see references above) have interspersed their testimony on land reservations with observations on wilderness. In general, aesthetics, magnificent scenery freedom from disturbance and associated wildlife were identified as wilderness characteristics. These along with ecosystem viability were put forward as prime values which should be preserved in any land reservation scheme. Furthermore it appeared at the Inquiry that there was general agreement that wilderness (land in the natural state) was in limited and decreasing supply. This, and agreement with Templeton, (109: 16,647) that the pipeline project will incur, "irretrievable aesthetic losses for times to be reckoned in centuries" would appear to designate wilderness as a non-renewable resource on the human time scale.

Acceptance of the concept that wilderness has at least the diminishing supply characteristic of a non-renewable resource immediately confirms the relevance of four related concerns: the now or never aspect of preserving samples of a diminishing resource; the high-grade, quality or (diminishing) purity aspect of the resource; the value that society places on the resource and how it is measured (Environment Protection Board 109: 16,714-717); and lastly, the large size of wilderness areas necessary to protect the integrity of populations of indigenous species at or near the top of the food chain, through preservation of their habitat in a complete viable ecosystem (Bliss 109: 16,651; McTaggart-Cowan 109: 16,659).

No disagreement was expressed at the Inquiry with the view that selection of wilderness areas (or any other conservation areas) could never be made from a broader, choicer base than exists now. There was general agreement that this base would continue to decrease in the future as it has with increasing rapidity in the past.

Pure wilderness is converted first to quasi-wilderness then lower quality land with every new intrusion or incremental activity. Only Hemstock, however (99: 15,054), considered the level of impact on the North Slope already precluded its consideration for wilderness. Other witnesses recognized that virgin wilderness sensu stricto is virtually non-existent anywhere and this fact should not serve as an excuse to preserve relatively unimpaired, but threatened remains.





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The true value of wilderness has always escaped the economist, at least in the eyes of its admirers. It was not therefore surprising that the Environment Protection Board panel agreed with the Commissioner's statement that wilderness has a higher order value than the (money) market recognizes and that it is almost impossible to quantify wilderness values (109: 16,714-717). Those who have tried unsuccessfully to estimate its market value have had to recognize that it may be held in highest value by the non-users - even those who never hope to be able to use it in a tangible sense. The following quote catches the essence of wilderness value appreciable at a distance: "The post-calving aggregation of nearly all the Porcupine herd in a few square miles (50,000 animals in one square mile) must be one of the great remaining marvels of this world, must be equal to the flights of the passenger pigeon and massing of buffalo. Such sights, or even the knowledge thereof, add perspective to our lives, a tonic and a humbling experience. Surely we must avoid possible conflict with this assemblage." (Bergerud 110: 16,756) Furthermore, even the sum of the values to users and non-users alike, even if knowable cannot yield the value of wilderness to society in the national as collective sense. Its national value is eloquently detailed but left unquantified in the following quote: (Templeton 47: 6228-229)

"Something will have gone out of us as a people if we ever let the remaining wilderness be destroyed; if we permit the last virgin forest to be turned into comic books and plastic cigarette cases; if we drive the few remaining members of the wild species into zoos or to extinction; if we pollute the last clean air and dirty the last clean streams and push our paved roads through the last of the silence, so that never again will Canadians be free in their own country from the noise, the exhausts, the stinks of human and automotive wastes. And so that never again can we have the chance to see ourselves single, separate, vertical, and individual in the world, part of the environment of trees and rocks and soil, brother to the other animals, part of the natural world and competent to belong in it".

Several witnesses expressed concern for the wilderness nature of important species (wolves, grizzly bears, caribou, snow geese),



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stressing their requirement for large territories free from human disturbance. Bliss (109: 16,650-651) and McTaggart-Cowan (109: 16,659) noted the large range and need for viable ecosystems, while Lent (110: 16,775) and Bergerud (110: 16,749-750) noted the wilderness needs of caribou as examples of species which required freedom from disturbance and vast areas of range.

Land Reservations Proposed and Planned

Evidence presented before the Inquiry was unevenly distributed across the variety of land reserves that fall within the mandates of a number of Federal and Territorial agencies. Wilderness was emphasized, but National Parks were given little attention, IBP sites were exhaustively treated, but recreation areas were not. It is important therefore to identify those agencies and programs which are dedicated to establishment and management of "conservation" lands and to relate their mandates and programs to the evidence.

Parks Canada has a long range goal of establishing at least one representative National Park in each of the National Park Natural Regions (National Parks, 1972). Region 8 (Mackenzie Mountain), Region 9 (Northern Yukon), Region 10 (Mackenzie Delta) and Region 11 (Northern Boreal Plain) are each crossed by the proposed pipeline routes. Wood Buffalo, in the southeast corner of Region 11 and Nahanni, near the southern extremity of Region 8 are the only existing national parks in the Mackenzie-Yukon area. Regions 9 and 11 have been studied for the purpose of identifying potential parks and landmarks. Parks Canada will be proposing a large park in the Northern Yukon (Region 9) centered on the Firth River drainage based on these studies (Parks Canada 1976a). The Horton-Anderson River areas in Region 11 may also be recommended for better representation of the Northern Boreal Plains (Parks Canada, 1976b). The proposed Pingo Park in Region 10, after more than 10 years is not yet finalized, and in any case was never intended to be representative of the magnificent Mackenzie Delta.

Parks Canada also has a mandate to establish National landmarks - outstanding natural features that by reason of their limited size do not warrant park status. Several candidate areas, also noted in the PAAG Report and at the Inquiry were identified in the Wrigley-Fort Good Hope area of Mackenzie River in an examination of the possible application of the Historic Waterways concept to





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the river (Parks Canada, 1974). (See under Water Recreation and Aethetics).

The Canadian Wildlife Service through the Canada Wildlife Act and cooperative agreements with appropriate provincial as territorial wildlife agencies can designate critical wildlife habitat as Co-operative Wildlife Areas. Lands may also be set aside as game preserves under Section 19(e) of the Territorial Lands Act.

A mechanism exists for the processisng of IBP site proposals although no specific legislation has been considered for their management. The Minister of Indian and Northern Affairs has given support in principle to the concept of Ecological sites in the North, established a Working Group to review proposed sites and make recommendations to the minister and established a procedure for submission of sites for review and final designation. Approved sites are expected to be transferred to the jurisdiction of the most appropriate act such as the National Park Act, Canada Wildlife Act or perhaps a Territorial Ordinance. The IBP has stimulated public and government interest in conservation lands, but has not opened new categories into which these lands can be placed. Under the Shipping Route Regulations of the Canada Shipping Act, shipping can be excluded from areas deemed critical to wildlife.

The Territorial Ordinances offer scope for setting aside various "conservation" lands, particularly lands for recreational use. It would appear that the following provide legislative framework in the Northwest Territories: Area Development Ordinance, Commissioner's Land Ordinance, Historical Resources Ordinance Planning Ordinance, Territorial Parks Ordinance and the Travel and Outdoor Recreation Ordinance, while generally comparable legislation exists for the Yukon.

Although there is a broad range of statutes and programs for the acquisition of "conservation" lands at the national and more local level, progress is slow. Budgets, staff size and priorities limit the rate at which any agency can pursue one of its goals. Land acquisition is further slowed because so often negotiations are necessary to settle land-use conflicts or because two agencies or levels of government are involved and because the uncertainty which is a part of all negotiation. The normal delays involved in reaching formal land-use decisions will be greatly extended and immeasurably complicated because of the unavoidable





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uncertainty of land management planning in the north and the land claims settlement.

The comparative rates at which major engineering projects and "conservation" land acquisition programs proceed gives rise to the belief, as does the Inquiry evidence, that development could for outstrip land and wildlife protection. We are concerned therefore that future options not be foreclosed by such development and hence our proposal for provisional reserves.

RECOMMENDATIONS:

1. The Government of Canada should give serious consideration to compensating the Canadian public for the loss of these public lands in their natural state which will be forfeited for pipeline use and for those adjacent lands in their natural state which will suffer secondary impact by setting aside, over and above specific lands recommended for interim reservation elsewhere in this Land Reserve Section, lands on a permanent basis for non-development according to the following suggested formula:
  - a) for those lands in their natural state pre-empted by pipeline use, approximately equivalent acreage
  - b) for those lands in their natural state within the zone of influence or harmful impact, approximately 25 percent of the equivalent acreage

Comment: Possible trade-off areas include the Travaillant Lake area and the Horton and Anderson drainage basins (Parks Canada 1976b).

2. The Government of Canada should give serious consideration to extending the principle of compensation of the public for consumptive use of public resources by private industry through royalty fees, to its application to the consumptive use of wilderness.

Comment: Wilderness is a public resource which can be used by the public as by private interests. Such use can be either consuming or non-consuming by nature. A consuming use is one which destroys or degrades the wilderness, and so decreases its value for other users. Industrial, commercial and engineering activities are



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almost invariably consumers of wilderness and their use is related not to the wilderness per se but to some other attribute of the site. Non-consuming use is restricted to activities such as hiking, skiing, canoeing and limited hunting, trapping and fishing.

One way to aid in limiting unnecessary destruction of, or damage to wilderness would be to charge users of such wilderness a royalty fee, on a per acre basis. The amount of royalty would vary, depending on the degree of damage or degradation involved.

3. The Government of Canada should provisionally reserve under Section 19 of the Territorial Lands Act, the following areas which officially or unofficially have been identified and recommended for preservation.

International Parks as Wildlife Ranges

- a) Proposed Canadian contribution to the proposed Arctic International Wildlife Range - being all lands between the Alaska and Northwest Territories borders lying north of the Porcupine River, and including Herschel Island.

Comment: No attempt has been made to eliminate overlap or duplication where they exist. For example: the proposed Canadian portion of the Arctic International Wildlife Range includes the proposed Firth River National Park which in turn includes the proposed Firth River IBP site.

National Parks and National Landmarks

- b) Proposed Firth River National Park (Parks Canada, 1976a).
- 3) Mount Gaudet and Roche-qui-trempe a'l'eau
- 4) Bear Rock
- 5) Upper Ramparts of Mackenzie



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Game and Bird Sanctuaries

- a) Proposed Mackenzie Bay White Whale Sanctuary being generally in the Shallow Bay. Mackenzie Bay concentration in area described by Sereant, west of Garry Island, but in any case to be defined in consultation with the Canadian Wildlife Service.
- b) Mackenzie Bay Bird Sanctuary being generally the entrance and flanking portions of Mackenzie Bay, but in any case to be defined in consultation with the Canadian Wildlife Service.
- c) Kendall Island Bird Sanctuary Extension to the East as to be defined in Consultation with the Canadian Wildlife Service. See also Wildlife Management.

IBP Ecological Reserves

- 1. Dolomite Lake - Campbell Lake
- 2. Caribou Hills
- 3. Willow Lake - Brackett Lake
- 4. Old Crow Basin
- 5. Firth River
- 6. Rat River
- 7. South Mackenzie Delta
- 8. Ebbutt Hills
- 9. Canoe Lake (Richardson Mountains)
- 10. Garry and Pelly Islands
- 11. Toker Point
- 12. Herschel Island
- 13. Deep Bay Wood Bison Sanctuary
- 14. Horn River
- 15. Mills Lake
- 16. Heart Lake

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1. Transcripts Exhibits, Basic Documents

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Special Land Areas  
Land Reserves

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## RECOMMENDATIONS

1. At the time of issue of any right-of-way permit for a trunk gas pipeline in the Mackenzie Valley and northern Yukon, the Government of Canada should set aside as provisional land reserves the special-interest areas listed in the following. The Territorial Lands Act could be used for setting up these reserves.
2. Within each reserve appropriate interim controls should be placed on ongoing industrial or commercial activities and limitations should be placed on any proposed new industrial or commercial activities (and on access routes resulting from such activities) commensurate with the environmental sensitivity of the reserve area and the concerns that have given rise to its special-area status.
3. Administration of the provisional reserves should not restrict the traditional activities of native people.
4. Relative to each reserve area, the government agency responsible for implementing the provisional reserves should determine the boundaries of the reserve and the limitation and controls that should be applied therein after consultation with the proponent (if applicable), interested government agencies, the Pipeline Agency, and non-government interest groups including native people. (also see "Land Use Planning").
5. In the following list, those special areas west of the Mackenzie Delta are intended to be reserved if the approved pipeline involves a Prudhoe Bay lateral across the northern Yukon; those special areas in the Mackenzie Delta should be reserved if the approved pipeline involves the Cross-Delta route; and the special areas along the Mackenzie Valley should be reserved in the case of a Mackenzie Valley pipeline.
6. The following special areas are recommended for provisional reserve status.

### Arctic International Wildlife Range

#### a) Proposed Canadian portion

#### Comment:

No attempt has been made to eliminate overlap or duplication where they exist. For example: the proposed Canadian portion of the Arctic International Wildlife Range includes the proposed Firth River National Park which in turn includes the proposed Firth River IBP site.



National Parks and National Landmarks

- a) Proposed Firth River National Park (Parks Canada, 1976a).
- b) Mount Gaudet and Roche-qui-trempe à l'eau
- c) Bear Rock
- d) Upper Ramparts of Mackenzie
- e) A National Park representative of National Park Natural Region 10 (Mackenzie Delta)
- f) A National Park representative of National Park Natural Region 11 (Northern Boreal Plains)

IBP Ecological Sites

- 1. Dolomite Lake - Campbell Lake
- 2. Caribou Hills
- 3. Willow Lake - Brackett Lake
- 4. Old Crow Basin
- 5. Firth River
- 6. Rat River
- 7. South Mackenzie Delta
- 8. Ebbutt Hills
- 9. Canoe Lake (Richardson Mountains)
- 10. Garry and Pelly Islands
- 11. Herschel Island
- 12. Deep Bay Wood Bison Sanctuary
- 13. Horn River
- 14. Mills Lake
- 15. Heart Lake





### Wildlife Areas

These areas are proposed for provisional reservation based on testimony and exhibits before the Inquiry and are recommended for ultimate designation as Game or Bird Sanctuaries or Cooperative Wildlife Areas. The areas to be covered by these reserves should be delineated by the relevant wildlife agencies through the Wildlife Coordinating Committee proposed in the section of this report on "Game Management and Monitoring".

- a) Mackenzie Bay White Whale Sanctuary
- b) Mackenzie Bay Bird Sanctuary
- c) Kendall Island Bird Sanctuary Extension
- d) Mt. Goodenough Dall Sheep Range
- e) Mackenzie River Islands (Spring migration areas)
- f) North Slope

### Recreation and Conservation Areas

These areas are proposed for provisional reserves based on testimony and exhibits before the Inquiry. They should be confirmed and delineated by the Pipeline Agency according to the mechanism outlined in the section of this report on "Recreation Areas".

- a) Travaillant Lake Area
- b) Donnelly River Area
- c) Norman Range Area (Gibson Ridge - Oscar Creek)
- d) Vermilion Creek and Sinkhole Area
- e) Jungle Ridge
- f) Big Smith Creek Area



## RECREATION AREAS

### GENERAL RECOMMENDATIONS

As the public demand for high quality outdoor recreation is increasing and as (potentially) suitable areas are decreasing (in number, size and quality), the Company shall take special measures to retain and protect (potential) recreational areas and qualities in the final route location, siting of associated facilities, and construction and operation procedures.

The pipeline company shall so locate, construct and operate the pipeline so that minimal disturbance is caused to waterbodies and watercourses, to their aesthetic and natural values and to their recreational potential.

### DISCUSSION

Outdoor recreation will play an increasingly major role in the North as it becomes the only place left for southerners to "get away from it" and as northern residents become increasingly involved and concerned about outdoor recreation. The potential recreation areas accessible to the average citizen and tourist, and their natural or wilderness attributes must therefore be preserved.

Although a permanent haul road paralleling the pipeline is not planned, it is clear that the most accessible recreation areas in the North are going to be in general proximity to the pipeline, whatever its route, because the Mackenzie Valley and Alcan Highway have been and will remain major transportation corridors.

As pipeline facilities may be heard or seen at several miles distance, particularly over water, long term land commitments to the project will pre-empt, degrade and render less attractive (to the recreationist), lands and associated waterbodies far greater in extent than the acreage devoted to the pipeline and its related facilities. Scenic and wilderness values in particular are subject to "long range" damage and cannot be restored, once degraded through emplacement of incompatible facilities, structures or even from sharply bounded vegetation changes.

Thus pipeline routing, and indeed other corridor developments, should avoid (potential) recreation areas by a distance sufficient that the development cannot be seen or heard by the recreationist.



## Land

The recent dramatic increases in outdoor recreation have resulted in increasing pressure on existing recreational lands in southern Canada. Mounting pressure on northern Canada is attested by rapidly increasing use of the most northern National Parks by southern Canadians and others. Completion of the Mackenzie Highway will bring greatly increased pressure to bear on Mackenzie Valley lands by non-native people, perhaps drawn from equally far away. The pipeline project will be highly visible and evident to tourists entering the Mackenzie Valley by air, land or water. Tourists' first impressions may be of the pipeline project, not of the long anticipated recreational values.

A range of native people activities that are partly recreational, partly "living off the land", include berry picking, fishing, hunting, camping, picnicing and general outings. Each of these activities is subject to impact either through crowding or competition from pipeline employees or by pre-emption or disturbance of the sites by pipeline project activities.

Undisturbed land near settlements will take on increased value to residents as the overall impact of the pipeline is felt in the first few years. Any pre-emption of lands in the natural state and near settlements will decrease opportunities for native people to temporarily "escape" by recapturing the "old ways" in recreational activities. As native populations are subjected to increasing stresses from the economic development of the Mackenzie (whether they opt to participate or not), they are likely to place ever higher values on lands where they can escape "southern" pressures.

As well as these general concerns, there are a number of site-specific areas with modest to high recreational potential where proposed pipeline routing and siting of facilities pose conflict with recreational use and values. Specifically, scenic views will be marred; wilderness qualities of the landscape and of rivers will be lost or degraded; wildlife and fish resources could become over-exploited, scarcer, or less accessible in areas frequented by recreationists; campground sites may be pre-empted, noise may be introduced and aircraft flight corridors could intrude upon wilderness routes and hiking trails. Surface drainage and vegetation are both certain to be changed from the natural condition over limited areas. The consequences will be that some potential recreation areas could lose that potential, while others, although developed, would be decreased in quality.

Many of the areas listed in the Appendix or the referenced reports appear to be suitable candidates for Territorial Parks or special areas under the Agreements for Recreation and Conservation Program (Parks Canada). Many also have a strong water focus (see "Terrain, Landscape and Waterbodies" and "Location of





Facilities"). Recommendations in these areas of concern are also relevant to protecting recreational areas.

There are only three basic alternatives (to achieve protection):

- a) avoidance or re-routing;
- b) relocation of facilities along the route but further away from recreation areas; and
- c) special protective measures beyond the standards applied elsewhere on the line.

Because pipeline routes and locations are not yet final, site-specific recommendations relating to the present proposals may not be relevant to the final design. Site-specific examples, (see Appendix) can serve however to alert the Company to unacceptable situations or conditions, to illustrate typical necessary changes and to guide the Agency.

On page 379 of the PAAG report, the Applicant was asked to prepare a list of scenic and potential recreation sites and interactions for review at final design. Although both Applicants said before the Inquiry that they were preparing such lists, they have not yet been forthcoming. The list in the appendix, although a beginning, is by no means an adequate basis for government's input into a needed agreed list of areas warranting protection, or for determining the degree of protection required. The need remains for an agreed list based upon a comprehensive inventory by both parties (industry and government) and detailed analysis of interaction by industry with review by the Agency.

This proposed agreed list should be used as a basis for establishing protection priorities (type and degree of protection). However, some areas, because of the favourable references to them at the Inquiry or the interest expressed in them by government agencies, already appear to merit provisional protection until later, more informed decisions as to appropriate status and management can be made (see "Land Reserves"). Provisional reservation precludes no options -- rather, it maintains future options at the maximum.



## Water

Outdoor recreation has a strong bias towards water. Some activities are purely water oriented, and many others are enhanced by the presence of water. Water for recreation purposes would appear to be held in high esteem by the public. Further evidence of its value is seen worldwide in the premium prices of lake front or streamside lots, cottages and hotel rooms.

The proposed pipeline will cross most Mackenzie eastside tributaries between Fort Simpson and north of Travaillant Lake as well as pass close by some of the larger lakes and groups of lakes. The potential cumulative impact on Mackenzie Valley and North Slope waters is great because of the high proportion crossed by, or in close proximity to, the line.

The nature of potential impact ranges from physical and chemical pollution of the water in the short term with the possibility of recurrence or long term effects, to very long term effects such as location of compressor stations or roads that detract visually and in other ways (e.g. noise, maintenance activities).

A list of potential impacts on waterbodies and watercourses includes:

- a. pollution of the water with silt, land clearing and construction debris, oil, greases, toxic chemicals, sewage and wastewater;
- b. bank or shoreline damage from cuts, fills, erosion and sedimentation either initiated or accelerated, construction pads for river crossings, land clearing and changes in vegetation due to alteration of the moisture or light regime;
- c. construction of facilities which visually detract or which facilitate or necessitate activities incompatible with recreational pursuits (wharves, roads, borrow pits, compressor stations, valves, storage sites);
- d. drawdown of water levels exposing shoreline and causing vegetative and faunal changes;
- e. flooding with vegetative and faunal changes; and
- f. construction of river training works or dikes around borrow pits creating unnatural elements on flood plains.



The importance of water lies not only in its boating or fishing potential but more broadly in the fact that the recreationist, traveller or resident looks to water (figuratively, if not literally) for enhancement of the outdoor experience. And this enhancement depends primarily on its naturalness, purity and aesthetic qualities. Therefore any aesthetic damage to waterbodies must be regarded as damage to the focal point of most (potential) recreational experiences.

Not every proposed river crossing is a potential park site, nor is every lake passed close-by of great recreational potential, yet it is virtually certain, for reasons already cited, that these water-enhanced parcels of land are the most attractive along the right-of-way. Degradation of these is not tolerable because of the proportion of existing streams and lakes so affected, the nature of the Mackenzie Valley as a transportation corridor (in general) and the potential of the Mackenzie Highway as a tourist route (in particular).

Although the Mackenzie Highway will interact similarly with many of the same waterbodies, the concern remains, not just in spite of the highway, but also because of it. This will be the case where separation of the two facilities (pipeline and highway) is so great that damage is done twice to every watercourse or where separation is so limited that visual and/or physical interaction results.

Two types of watercourses recognized for special attention by Parks Canada are "Historic Waterways" and "Wild Rivers". Excellent candidate rivers for both classes are threatened by the proposed pipeline project.

Much of the project's impact will be directed on the historic Mackenzie River. Many facilities (such as wharves and access roads,) will be on its banks, while many others will be visible from it. Increased post-construction exploration activity from Alberta to the Beaufort Sea-Mackenzie Delta could mean modifications to and the addition of further facilities to the artery of the Mackenzie Valley transportation corridor.

The qualifications of the Rat River as both an Historic and a Wild River have been presented to the Inquiry. The threat to the Rat and several candidate Mackenzie eastside tributaries results from both the pipeline river crossing with consequent bank disturbance and much more importantly, the siting of facilities complexes in close proximity to the rivers (see "Location of Facilities").





RECOMMENDATIONS: THE COMPANY

1. The Company shall submit to the Agency its promised list of scenic and recreation sites and expected pipeline interactions not later than 90 days after a permit for a right-of-way is issued in order that no sites be pre-empted or damaged before adequate assessment can be made by the Agency.
2. The Company shall protect potential recreational sites with exceptional scenic values, unusual features or a rich mix of natural features or other special values by re-routing, re-location of facilities or special measures above and beyond those routinely employed in the pipeline, in those cases where the Agency deems such measures necessary for protection. Extra special measures could include, for example, extra noise attenuation, special architectural design, special siting, location and landscaping.
3. The Company shall make all reasonable efforts to route the pipeline so that the right-of-way is not visible from the Mackenzie Highway and shall submit to the Agency, in the final design stage, maps showing:
  - a) those sections of the pipeline right-of-way expected to be visible from the highway;
  - b) those highway sections from which the pipeline right-of-way is expected to be seen while travelling north and south.
4. The Company shall locate its pipeline river crossing sites in consultation with the Agency so as to optimize the separation of the pipeline and the Mackenzie Highway (where applicable) to limit adverse physical interaction between the two, but protect the watercourse from having two distinct reaches disturbed.

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Comment: Terrain conditions on a site by site basis will determine how close the facilities can be placed at stream crossings. Within the existing geotechnical constraints the pipeline should be located as close as possible to the highway so as to avoid disturbing two stream reaches, but not so close as to

- a) visually detract from the view of the stream from the highway;
- b) detract from the use and enjoyment of a picnic, campground or park site at the highway-stream crossing; or



- c) interact physically with the highway in terms of soil or slope stability, water regime, icings, etc.
5. The Company shall, to the utmost of its ability, route the pipeline so as to avoid waterbodies with significant aesthetic appeal and recreational potential by as wide a margin as necessary to minimize the impact on these attributes and shall locate facilities along this route so as to minimize adverse effects on these attributes.
6. The Company shall not route the pipeline across both a river and its tributary if re-routing downstream of the confluence is feasible, and, in any case where the Company deems it not feasible to comply, it shall submit to the Agency a full and detailed comparison of the route alternatives.
7. The Company shall not route the pipeline closer than one mile to large lakes, groups of lakes and "scarce" lakes except where severe topographic constraints (such as a mountain pass) prevent this.

Comment: A "scarce" lake is one which takes on aesthetic and recreational importance in large measure because it is the only one in a generally lakeless area.

The outdoor recreationist, through enriching his experience on the water, also enhances his perspective of the landscape by viewing it from the water. This aesthetic enhancement cannot be protected by the narrow buffer zone adequate to protect fish from siltation: hence the one mile wide buffer.

8. The Company wherever possible shall avoid locating the pipeline between the Mackenzie Highway and any waterbody to which highway travellers might reasonably be expected to be attracted, and particularly where the highway will pass within one mile of a waterbody; in any case where the Company deems it not feasible to comply, it shall submit to the Agency a full and detailed comparison of the route alternatives.



RECOMMENDATIONS: THE GOVERNMENT

9. After consultation with the Company, the Agency should finalize an agreed list of scenic and recreational sites within 60 days of receipt of the Company's list.
10. Before final design, the Agency, in consultation with the Company, appropriate government agencies and the native peoples, should:
  - a) Determine or confirm which sites require protection from the pipeline project.
  - b) Determine what environmental and recreational values require protection.
  - c) Determine what type and level of protection is to be afforded to the sites.

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Comment: This may include provisional reservation.

- d) Recommend limits to those sites which require boundaries (i.e. provisional reserves).
- e) Where appropriate, recommend to the government the establishment of provisional reserves.

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Comment: The Agency should use the agreed list of scenic and recreational areas as well as the Company's list of pipeline interactions as an information base.

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11. The Government of Canada should move at an early date towards designation of rivers along the pipeline route as "Historic Waterways" and "Wild Rivers" by initiating consultations with the appropriate territorial governments under the Agreements for Recreation and Conservation Program, Parks Canada.

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Comment: A preliminary assessment of the Mackenzie River has been done to assess the river's potential for designation as a "National Historic Waterway" (Parks Canada, 1974). It was concluded (p.44) that: "The Mackenzie offers sufficient potential to justify Federal-Territorial consideration as a National Historic Waterway and the spine of a corridor in which a broad range of northern natural and cultural interests can be served."





SOURCES OF INFORMATION

1. Transcripts, Exhibits, Basic Documents

PAAG Chapter 10.6

2. Reports

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1974 Environmental impact assessment of the portion of the Mackenzie gas pipeline from Alaska to Alberta; from Environment Protection Board, 1976, Environmental Impact Report, Vol. IV, Research Report.

Canada DIAND

Sites for roadside development along the Mackenzie Highway.

Canada DIAND

1974 Possible applications of historic waterways to the Mackenzie River; Doc. No. I0631R4.

Northwest Territories. Department of Industry, Division of Tourism

Areas of outdoor recreation potential Mackenzie River valley



APPENDIX  
RECREATION AREAS

AREAS ON OR NEAR PIPELINE WITH RECREATIONAL OR AESTHETIC VALUES

<u>Area and Mileage</u>	<u>Project Component</u>	<u>Special Value</u>
Lake Group 505-528 (CAGPL Interior)	General access	Large group isolated lakes
Malcom River 224	Compressor	
Trail River 270	Compressor	
Rat River 408	Facilities complex	Many values
Norris Creek 90	General access	Large group isolated lakes
Fish Trap Lake 127	Facilities complex	Large lake
Lost Reindeer - Travaillant Lakes 110-150	General access	Rich, varied habitat
Lake Group 143 (Foothills)	Right of way	
Thunder River 171	Facilities complex	Attractive river valley
Tieda River 250	Pipeline - highway	
Loon River 269	Pipeline - highway	
Hare Indian River 285	Wharf, access roads highway	Attractive river valley
Donnelly River	Wharf, access roads highway	Sensitive fish resource
Hannah River 336	Pipeline - highway	Attractive river valley



Oscar Creek 357	Facilities complex	Attractive river- mountain combination
Norman Range esp. 350-360	Pipeline - highway	Scenery
Bosworth Creek 373	Pipeline - highway	Use by residents Norman Wells
Canyon Creek 385	Pipeline - highway	Camping
Francis Creek 388	Pipeline - highway	Camping
Heluva Creek 389	Pipeline - highway	Camping
Christina Creek 390	Pipeline - highway	Camping
Prohibition Creek 393	Pipeline - highway	Camping
Vermilion Creek 400	Facilities complex	Sinkholes
Lake Group 440-445	Right of way	
Old Fort Paint 446	Facilities complex	Historic site
Big Smith Creek 456	Pipeline - highway	Waterfalls
Blackwater River 508	Unnecessary crossing of tributary	Attractive river valley
Whitesand Creek (N.) ) 533 )	Unnecessary double	
Whitesand Creek (s.) ) 539 )	crossing	
Lake 539	Right of way	Scenery
River Between Two Mountains 582	Compressor	Attractive river valley





Willowlake River 606	Double crossing river and tributary	Attractive river valley
Willowlake River Tributary 622	Compressor double crossing	
Lake Group 633-640	General access	Lakes on Ebbutt Hills
Lake Group 690-705	General access	Wildlife values
Jean-Marie Creek 714	Unnecessary pipeline crossing	
Jean-Marie Creek 736	Unnecessary pipeline crossing	
Lake Group 740	General access	Isolated lake group
Kakisa River 810 (Foothills)	Borrow pit	Attractive river valley



ARCHAEOLOGICAL SITES

GENERAL RECOMMENDATION

An archaeological project shall be set up to identify, protect, excavate, and investigate archaeological sites and associated paleoecological materials on or adjacent to lands used by or for the pipeline project. This archaeological project shall be funded by the Company and organized under an arrangement between the Company, the Agency, and the Archaeological Survey of Canada, National Museum of Man.

DISCUSSION

Archaeological sites have often been described as a finite, fragile, non-renewable resource which must be "developed" with the care and insight which can only come from specialized training and which must be protected from destruction by any agency not endowed or equipped to record and preserve archaeological data. "Any human or natural force that alters, buries, or floods the earth can be regarded as being potentially destructive to archaeological data" (Wright 1969:5); obviously such forces include pipeline construction projects. Preliminary studies in the Mackenzie Valley and elsewhere have shown that some disturbance and destruction of archaeological sites is inevitable in a project of the size of the proposed pipeline.

There is another side of the coin, however, which is equally important. Our present knowledge of Canada's prehistory South of 60°N is far greater than our understanding North of 60°N primarily because there has been so little development leading to disturbance of the earth's surface in the North. The very process of disturbing an archaeological site is often the means of finding the site, and the numerous large borrow pits, the ditch excavation, and the excavations for other facilities involved in the pipeline project may provide unprecedented opportunities for archaeological and paleoecological studies which would further our knowledge as much as or more than the disturbances would hinder it. This is an opportunity not to be taken lightly. As of 1972, after thirty years of archaeological research in the territory, the known prehistory of the Yukon was based upon a very sparse record which averaged only one known site per 670 square miles (McCrilan 1973:143).. Sites are difficult to find in the boreal forest, logistics are often complex and expensive, and human population density may always have been quite low so that archaeological sites may in fact be relatively



Special Land Areas  
Archaeological Sites

small and rare. It would be irresponsible for our generation to fail to take advantage of an opportunity to provide for future generations a more complete record of past human occupation and environmental evolution in the North.

Existing Government Controls

Existing legislation clearly stipulates that archaeological sites should be protected from both willful and negligent destruction, but the terms of the legislation can only be met by the organization of an archaeological project such as the one proposed here. The land use regulations prohibit industrial excavations or other land use operations within 100 feet of a known archaeological site, and whenever an operation encounters a previously unknown site the operator is instructed to suspend his work and notify the engineer or an inspector of the location and nature of the occurrence. The archaeological project outlined below would provide such an inspector, in the form of the archaeological field party chief, for each construction spread. The process of site evaluation and rescue excavation should thereby proceed smoothly and promptly in keeping with urgent construction schedules. Any other approach to this problem would only delay the entire construction procedure.

Archaeological Sites Regulations are embodied in the Yukon Act and the Northwest Territories Act and stipulate that all archaeological investigations must be conducted under permits from the Minister. These laws were designed to protect archaeological sites from looting or other wilful or accidental disturbance and need only to be enforced through adequate inspection. Such inspection could be provided by the personnel of the archaeological project who would report offences to the appropriate authorities for prosecution.

It appears that existing law provides a legal framework for the protection of archaeological resources in a construction project of this kind, but only the organization of an adequate archaeological project can ensure that this legal framework will be honoured. It is certainly in keeping with this position that both Applicants have proposed archaeological work as a complement to the pipeline project. Concerns expressed regarding these proposals both during the Inquiry and in the PAAG Report pertain in many cases to preliminary phases of the work which have already passed. Other such concerns are addressed by the recommendations enumerated below.





## DESCRIPTION OF ARCHAEOLOGICAL PROJECT

### Project Organization

The archaeological project should be organized by a project director whose appointment and plan would be subject to approval by the Company, the Agency, and the Archaeological Survey of Canada, National Museum of Man (ASC/NMM). The director should be provided with considerable latitude in the planning of the project, but an approximate indication of the scope of the project can already be outlined. An office staff including a secretary and a draftsman/photographer would be required throughout the project period, and a cataloguing crew might be needed in later phases of the work. It is expected that much of the laboratory work would be accomplished by individuals selected from the field staff. The minimum requirement for field staff would include two archaeologists (or one fully qualified archaeologist and one student) on each construction spread. Each of these teams would report to the project director who would coordinate the efforts of all teams and would in turn report to the Agency and the ASC/NMM. Additional field workers should be made available through consulting arrangements as needed on any particular spread. For example, an archaeologist with special knowledge of a particular area might be called in for consultation at any time during the work, or a paleoecologist could be brought into the field to assist in the sampling of particularly productive deposits. Larger excavation crews might need to be on stand-by during the summer months. In the post-construction and analytical phases of the project the project director would be responsible for supervising the preparation of preliminary and final reports.

### Budget

The Company should be prepared to provide a budget to be written by the project director and approved by the ASC/NMM. This budget would include:

- Salaries for all project staff
- Field Equipment
- Laboratory equipment
- Office equipment (bought or rented)
- Camping equipment (for field camps beyond the reach of existing construction camps)
- Logistic support (both within and beyond the logistic



Special Land Areas  
Archaeological Sites

ranges of construction camps on any given spread)  
Subsistence expenses during field work  
Freight costs  
Consulting fees (as needed to supplement project  
personnel)  
Laboratory service fees (for radiocarbon dates,  
photography, etc)  
Publication costs

Preliminary work

A library of relevant published and unpublished reports must be assembled through purchase and loan, and a file of maps and aerial photographs must be available for the entire line. The basic equipment for all phases of the work should be purchased, rented, or borrowed, and the project staff should be hired for all construction spreads. Since ample lead time is essential to the successful and economical conduct of this kind of work, the preliminary phase of the project should be initiated on all spreads as soon as the project is begun. Lead time will be shortest on those spreads first put into construction, and the project will need to consolidate much of its resources on such spreads in order to accelerate the survey and rescue excavation work. Simultaneously, however, the preliminary work on every other spread should begin so as to take advantage of longer available lead time and avoid the need to carry out the entire project with undue haste. Since any presently known sites which lie in the right-of-way or in a position threatened by an ancillary facility must either be rescued or protected, any decision to protect sites (minor relocation, fencing, etc.) will have to be made quickly during the preliminary phase so that rescue excavations can be initiated wherever protection is not feasible. The project director must be invested with the authority to request and fully discuss relocation and other protection measures. In order to avoid delays in construction activities the project director should be authorized to fence significant archaeological concentrations wherever they lie outside the actual limits of construction needs but might be threatened by poorly controlled access to construction materials; such fenced areas would be strictly off-limits for non-archaeological personnel.





Special Land Areas  
Archaeological Sites

Construction phase

Archaeological field crews should be given every opportunity to observe borrow pit and other excavations in which archaeological and paleoecological materials are expected to occur. The largest single exercise of this kind will occur in the ditching operation during which the archaeological crews must be given an opportunity to examine and log the ditch walls prior to the laying and burial of pipe. Adequate artificial lighting must be provided where necessary, and arrangements will have to be made for transportation along and access to the ditch. Since it is not expected that adequate time will be available for rescue excavations of newly discovered sites in the ditch, some means of permanent flagging of such sites must be devised and must be protected from removal by later phases of the construction work.

Post-Construction phase

Although this phase is primarily a period for curatorial work on collections obtained earlier in the project, it may well include some additional field work on sites found during construction. Assurances are needed that access to the right-of-way will not be reasonably withheld wherever previously unknown sites are discovered during ditching. Such sites could appear nearly anywhere in the ditch walls, and deeply buried sites could add significantly to our understanding of northern prehistory. There should be some discussion in advance concerning excavation techniques which would not jeopardize erosion control measures and pipeline stability and integrity. Since the exposure of sites in the ditching operation may lead to accelerated degradation of their contents through aerobic oxidation, changes in the soil moisture regime, and minor downslope movements within their matrices, it is important to conduct proper excavations as soon as possible following burial of the pipe. It would be hoped that sites found in the ditch would be of sufficient lateral extent that archaeological excavations could be conducted well away from the pipe, but smaller sites would necessitate some consideration of the limits of encroachment for an archaeological excavation in the right-of-way. Other major activities during the post-construction phase would include the preparation of preliminary reports and the completion of any necessary conservation measures, particularly for any normally perishable materials (e.g. wood, basketry, hide) which might be found in waterlogged or frozen deposits.



The first part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have been engaged in the work.

The second part of the report deals with the financial situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have been engaged in the work.

The third part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have been engaged in the work.

The fourth part of the report deals with the financial situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have been engaged in the work.

The fifth part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have been engaged in the work.

The sixth part of the report deals with the financial situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have been engaged in the work.

The seventh part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have been engaged in the work.

The eighth part of the report deals with the financial situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have been engaged in the work.

The ninth part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have been engaged in the work.

The tenth part of the report deals with the financial situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have been engaged in the work.

### Analytical phase

In the analytical phase which would continue for some time following construction, final reports should be prepared on all excavated sites. All the data resulting from field work during the project should be organized for permanent deposition in the Archives of the ASC/NMM, and all archaeological collections should be accessioned by the ASC/NMM as soon as they have been adequately analyzed and reported. Publication of such reports should be arranged through consultation between the Company the project director, and the ASC/NMM. Paleontological collections should be examined for possible archaeological significance and should be accessioned by the Paleontology Division, National Museum of Natural Sciences. Paleoecological samples should be catalogued and transferred to the Paleoenvironmental Programme of the ASC/NMM for evaluation and dispersal to specialists. Final deposition or "ownership" of field and laboratory equipment and supplies should be decided in advance through discussion between the Company, the project director, and the ASC/NMM.

### RECOMMENDATIONS

1. An archaeological project should be organized as soon as a successful applicant has been identified.
2. The project should be operational until one year after the commissioning of the pipeline plus an additional period agreed by the Company, the Agency, and the ASC/NMM to be adequate for the completion of final reports.
3. The project should be funded by the Company according to a budget to be written by the project director. The selection of the director, the means of organizing the project, the level of the budget, and all other aspects of the project should be subject to the approval of the Company, the Agency, and the ASC/NMM pipeline committee; this committee should be placed in a supervisory role for the purpose of monitoring the conduct and success of the archaeological project throughout its duration.
4. The project should have sufficient scope and flexibility to give suitable attention to paleontological and paleoecological deposits which have been shown to have significant bearing upon the interpretation of prehistory.



Special Land Areas  
Archaeological Sites

5. The project director should at all time have access to information on Company plans, locations, designs, and schedules which might affect his project, so as to maximize the lead time in which the archaeological work can be accomplished.
6. The Company must provide assurances that the archaeological field personnel will be given access to the ditch and to other areas of excavation and surface disturbance both before and during actual construction. Specific items of reference in this regard acceptable to the project and the Company shall be set up the Agency at the commencement of the project.
7. A method of marking sites for later study must be agreed to by the Company, the Agency, and the ASC/NMM, and such markers must be protected from subsequent disturbance. This recommendation acknowledges the general principle that it is often preferable to preserve an archaeological site rather than to excavate it within the context of a rapid salvage or rescue operation.
8. Terms of access to the right-of-way following burial of the pipeline must be established in advance. The act of exposing an archaeological site can lead to its decay even after reinternment, and certain sites may require careful excavation following the construction period.
9. The publication of final reports should represent the completion of the archaeological project and the termination of the Company's responsibility for funding work on the project.
10. At the time of project completion the data, samples, and collections of the project should be deposited in the ASC/NMM; equipment should be deposited with the ASC/NMM for use on other such projects.
11. The project director should be given a chain of command through which he can appeal to the Agency and the ACN/NMM in the event of failure by the Company or its contractors to provide the support essential for the conduct of the project. Likewise an appeal procedure should be defined for the Company in case the archaeological personnel exceed the mandate of the project or fail to pursue its objectives.



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## ENVIRONMENTAL INDICES

### GENERAL RECOMMENDATIONS

Prior to the commencement of the pipeline project, the government should initiate a program to investigate and establish a comprehensive set of environmental indices for the Mackenzie Valley, Northern Yukon and Beaufort Sea region.

### DISCUSSION

"Modern Society has an affinity for numbers. When problems have numbers attached to them modern technology is remarkably good at solving them, primarily through the skills of engineers. But when numbers can't be attached to a problem, modern man seems to be uneasy wishing the problem would go away and quantify itself.

"Environmental degradation or pollution is one of these problems which resist qualification. Something has gone awry, but how far and in exactly what manner is not clear. There are no numbers to tell man where he is or where he ought to be. This system, which can easily set the market for such non-essential items as an electric toothbrush, seems unable to cope with the value of a walk in the woods surrounded by clean air or a sail in the sunset across a pleasant harbour."

This statement by T.A. Murphy of the U.S. Environmental Protection Agency (Journal of the ASCE, June 1971) sums up the broad problem facing this pipeline project and other developments throughout Canada. It reflects the growing concern of all people about the quality of the environment as it is related to their quality of life. Inhaber (1974) assesses the same problem and suggests an "Environmental Index" approach that might assist in a solution:

"The term 'quality of life' is, to rephrase an old aphorism, something that everyone talks about but nobody understands ... As the parts which make up the quality of life become greater in number, the term becomes less scientific and more moral and political. Indeed, a recent Canadian election [in 1971] was fought on the basis of which party could best improve the quality of life.

"Diffuse as the term can become, most would agree that the state of the environment forms a



significant part of it. If we can evaluate environmental factors properly, we are well on our way to formulating an approach to evaluating the quality of life.

"... Accounts of man's environment have tended to be descriptive ("this is a smoggy day") or numerical ("there are x micrograms of sulfur dioxide per cubic meter of air today"). As our knowledge of the environment has become greater, more and more has been put on a numerical basis. The idea then comes to mind of presenting this information in the form of an index -- that is, comparing one environmental state to another state, either an optimal state or one which is judged to pose hazards to human beings or other components of the environment. The states to which comparison is made are chosen on the basis of scientific judgement.

"The idea of an environmental quality index (EQI) has been discussed before, in terms of air quality, water quality, noise, wildlife, pesticides, radiation, and many other aspects of the environment. A great many of the aspects of individual environmental indices are discussed in work by Thomas (1972).

"As well as the individual investigators mentioned in Thomas, government agencies have taken an interest in formulating EQI, or a number of EQI's, which would tell us (i) what we know or do not know about the environment on a broad scale and (ii) how its state was changing because of governmental and private actions.

"As an example of this official work, [there is] the Japanese effort toward devising an overall index for the quality of life; this Japanese index is said to include an EQI. In the United States, the Council on Environmental Quality ... commissioned a series of studies on aspects of EQI's in 1971. Results of some were presented in its annual report for 1972. However, the chapter which summarized them was significantly entitled 'The quest for environmental indices. In other



words, because of the developing nature of our understanding of the environment, any EQI will not be perfectly comprehensive, and in fact may never be.

"...However, this does not obviate the use of an EQI for telling us the approximate state of the environment now. In fact, the problem is endemic to all makers of indices describing human activities or their consequences. For example, when the consumer price index (CPI) became generally accepted in the 1930's, television and air conditioners were not in much use, and provision for expenditure on them has to be included in later editions of the CPI. Any EQI faces the same problem."

An index is a means of comparing a quantity to a scientific or arbitrary standard. Environmental indices are increasingly coming into use in Canada, the United States and in Europe. For example, Ontario has an air quality index which is used particularly in the metropolitan Toronto area to monitor the pollutants in air. When the pollutants reach various levels various polluting industries are shut down. The index serves as a measure of government and private industry performance. It does not solve the problem but it does tell where the trouble is. In the same way, a price index does not eliminate inflation but it does indicate how effective measures are in combatting it.

An index is essentially a fraction. The denominator is the established standard and the numerator is the measurement at a particular time or place. Environmental indices are complicated because of three factors. The first is the background effect resulting from natural causes that would exist even if man did not affect matters. The second problem lies in the areas for which standards should be established. standard: Many standards dealing with pollutants are set on a basis of danger to human health. The problem often goes beyond that however, to affect other aspects of the environment such as wildlife, fish etc. The third part of the problem is that certain standards are difficult to construct in the first place. For





example, it would be very difficult to establish a standard for aesthetic qualities in the environment.

It is sometimes difficult to get experts to agree on standards. Also the further we get away mathematically from the original data and standards the thinner the ice is on which we skate. These problems are not insurmountable though. Similar problems were faced in the past in establishing indices that we now accept as standard. Some of the official and unofficial indices that we include the Dow-Jones index of stock prices, indices of hours worked and wages earned in manufacturing, foreign trade indices, indices of currency circulation, industry output indices and bond price indices. The gross national product (GNP) is an index that is used extensively throughout the world. The GNP could be described as a cumulative economic index as opposed to a simple economic index like consumer or stock prices: The fact that it is cumulative is one of the reasons why it is invaluable. The most challenging task in the environmental field is to calculate a cumulative index. It is a goal that may not be achieved for some time.

A considerable amount of work has been done to develop environmental indices. The National Wildlife Federation in the United States has a rather arbitrary environmental quality index. The American Association for the Advancement of Science (AAAS) held a conference in 1971 at which about twenty papers were presented dealing with the subject. These papers were subsequently published in a book entitled "Indicators of Environmental Quality". The AAAS meeting showed that planners on the local and regional scale would probably be among the greatest users of indices. The papers presented showed a majority of experts present felt that, at least in their specialty, indices could and should be constructed. Their chief advantage is that they condense a vast quantity of complex information into a form that is easier to understand by the non-expert.

In 1971 the Council on Environmental Quality in the United States received its commissioned report on environmental indices from the MITRE Corporation. A total of 112 separate indices are considered in the





## Environmental Indices

MITRE report and equations are given for the detailed calculation of each. The proposed indices are arranged in 14 broad categories such as land, air, water, radioactivity and the like. Some categories of indices consider monetary aspects such as economic losses due to pollution and the amount spent on pollution control and research.

The rate of progress among countries towards environmental indices is highly uneven. No nation has yet issued a comprehensive and official group, although a combination of the work done so far would be sufficient for the compilation of such a set. Environmental indices have been evaluated from literally dozens of points of view, and most independent scientists who have worked in the field have urged that a start be made in producing them.

In 1972, a small working group was set up in the Canadian federal Department of the Environment to try to devise a set of environmental indices. To take account of as many viewpoints as possible, more than 50 scientists, engineers, and administrators dealing in environmental matters were consulted. One member of that group, Dr. H. Inhaber, has subsequently published a book on the matter, which lays out the basic arguments for indices in very simple terms. It shows how indices can be developed for air quality, waterbodies, land, biological concerns and aesthetics. It states;

"Environmental indices tell us clearly how much or little the environment has changed, regardless of how many dollar bills have been scattered over the landscape. For example, the government may claim that it has spent X million dollars to solve a particular problem in water pollution. In spite of inflation, most of us are rather impressed by that sum. We'd be somewhat less bowled over if the national or regional index of this aspect of water showed no change during that year. In effect, the index, not the amount of money spent, would be the bottom line .... Governments have been traditionally wary about the final reckoning. The highly paid



## Environmental Indices

executive may prefer to talk about how much he earns, rather than what he accomplishes. Similarly, governments would prefer to tell how much they've done to make a problem go away, not whether it is still around. In spite of this reluctance some governments have moved ahead on environmental indices. The results may be a little embarrassing at times, but since its our money, we should know what we are getting for it - press releases, or action."

These thoughts have applicability to a Mackenzie Valley pipeline project, both for the Company and the regulatory authorities that will be charged with surveillance and long term monitoring. A preliminary assessment by Inhaber of the data contained in various Environmental Social Program reports pertaining to the proposed pipeline indicates that indices can and should be used to evaluate changes in environmental quality in the area.

Indices offer one of the best opportunities for:

- a) conveying to the public in an easily understood fashion the general environmental status of the region;
- b) providing an overall guage to government and industry against which they can measure their performance;
- c) increasing awareness of the various workers on the project of the environmental impact of their activities;
- d) highlighting section of the pipeline and its related activities that are experiencing difficulties in complying with prescribed standards; and
- e) providing a basis for long term monitoring of subsequent developments within the Mackenzie Valley Corridor.

The Applicants have conducted a great deal of background and baseline studies which could form the basis upon which indices could be built. These data, the pristine nature of the area and the prospect of major future developments make it an ideal subject for environmental indexing. Such an innovative approach is a major challenge for government.



RECOMMENDATIONS: THE GOVERNMENT

1. The government should immediately establish a system of environmental indices for the areas of the pipeline corridor, gas plants and ongoing hydrocarbon exploration so that there is an easily understood measure of the state of the regional environment and standards against which short and long term changes can be assessed.
2. The government should establish a small full time task force headed by a senior officer to establish environmental indices as outlined by Inhaber. The task force should be independent of the government's pipeline regulatory agency, independent of line functions in any particular department and should be completely free to gather and interpret information from all government and Company sources as it sees fit. The task force should be established for the duration of the pipeline construction period after which the responsibility for the indices shall be incorporated into the ongoing work of the responsible government departments. (This may include Statistics Canada, Environment Canada and Indian and Northern Affairs).

Comment: The precise niche in the governmental organizational structure of this group is not something that is easy to define. There maybe definite merit in reviving the program within the Office of the Science Advisor in Environment Canada. It is clear, however, that there must be a reasonable degree of freedom in presenting results. If indices are obscured by political intervention, their value to the public will be lost. Economic indices are carefully screened, in this country at least, from this intervention. The same should happen with environmental indices.

3. The task force formed to produce the environmental indices should publish the indices at intervals as it deems fit.

Comment: One of the aspects of the Inquiry which has favorably impressed outside observers has been the openness of the proceedings. This approach should be continued in terms of indices. The calculations will not have the effect of producing action if they are hidden from sight. If they are to be adopted, it is suggested that they be regularly published at intervals of a few months, shortcomings and all. In this way, both the people living in the North, the general







## Environmental Indices

public and environmental groups could make up their own minds on the fate of the Valley.

4. In addition to establishing a scientifically sound set of environmental indices, the task force should:
  - (a) establish procedures so that the indices can be used for long term environmental monitoring in the region;
  - (b) establish the methodology of using the indices to control subsequent developments in the region;
  - (c) establish the parameters whereby the indices can be used to assess when environmental changes are reaching unacceptable and/or dangerous levels;
  - (d) propose a method of using regional indices as a "demerit system" for project regulation and control and for the implementation of penalties so that they correlate to the magnitude of the adverse environmental change;
  - (e) publish from time to time journalistic and scientific papers that describe the methodology and applications being developed.
5. The government should bear the cost of the task force, except that field logistics room and board shall be charged to the Company. The task force personnel shall be considered government's field representatives while in the field and should have all the appropriate rights of access and other priveleges.



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## LAND USE PLANNING

### GENERAL RECOMMENDATION

It is recommended that steps be taken to establish a planning process that is not only able to resolve present developmental and land-use conflicts, but that would have a validity in the future, given the aspirations and needs of the people who live in the region, as well as national priorities.

### DISCUSSION

The Mackenzie Valley is at an early stage of its development, and the latitude of choice that can be exercised with regard to its future is still considerable in comparison with most parts of Canada. Nevertheless, with each passing season, and with each public and private sector decision concerning townsite development, the construction of major transport facilities, the allotment of lands for municipal or industrial purposes, the settlement of native claims or the development of a resource, the number of options that are still open is decreased.

Virtually all northern development must involve land, and in areas such as the Mackenzie Delta there has been, during recent years, an exponential increase in the number of competing uses to which land is being put. The potential for chaotic development, the overwhelming of native peoples interests, or a stalemate is great.

Evidence before the Inquiry has shown northern planning to be fragmented in a number of different ways. Firstly, planning has tended to be on a project-by-project basis. While this type of government planning has been in some cases quite intensive, until recently, broader regional considerations and the cumulative implications of a number of projects in close proximity to each other have not received much attention. Secondly, northern communities have been faced with trying to comprehend the various demands made on them, through a myriad of committees (most of which were "advisory" only) of the many and diverse departments of two levels of government. Thirdly, and closely related to the first two, is the fragmented and piece-meal approach to local consultation on resource projects. With the single apparent exception of the attempt to prepare a regional plan for the Mackenzie Delta, there has been no visible effort to address the cumulative effects of all projects in an area. Finally, control of land use has been reactive rather than anticipatory, dictatorial rather than participatory. Because of land use commitments made under such an approach, there has already been a significant reduction in the freedom to plan future land use.





## Land Use Planning

Elsewhere in this submission are found suggestions concerning a devolution of power from the federal and territorial governments, and an increased voice for the people at the local level in controlling their own affairs. Education, health, local government and control of the type and scale of local economic growth are all areas in which there should be a significant increase in local involvement in planning and carrying out of government activity. To this list should be added land use planning.

An approach that should be given consideration is the creation of regional planning bodies, each spanning groups of communities. Those bodies could improve the process by which planning decisions are made and would enable a more effective, regionally focussed approach to consultation. The definition of community groups and regional planning areas would, in itself be a matter for consultation between the government and regional residents, and the question of native participants might have to be left in abeyance until the settlement of land claims. Such planning areas as were established would have to be large enough to permit certain economies to be achieved, and yet small enough to allow people a real voice and sense of identification. While, under any regional planning scheme, each community should have its area or zone of influence within which it would have the major voice in deciding what activities could take place, aspects of land use planning could include the zones of several communities in order to avoid excessive fragmentation. All proposals for the setting aside of land for special purposes, including land reserves for environmental protection, IBP sites, parks etc., as well as for pipeline development and traditional uses could be evaluated by the people of the region within the context of a regional plan; such development would be a major consideration of course, but it should be evaluated in the same way as other factors which have local and regional significance.

### RECOMMENDATIONS

See general recommendation and discussion, above.

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## Land Use Planning

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